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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY—BULLETIN NO. 229.
B. T. GALLOWAY, *Chief of Bureau.*

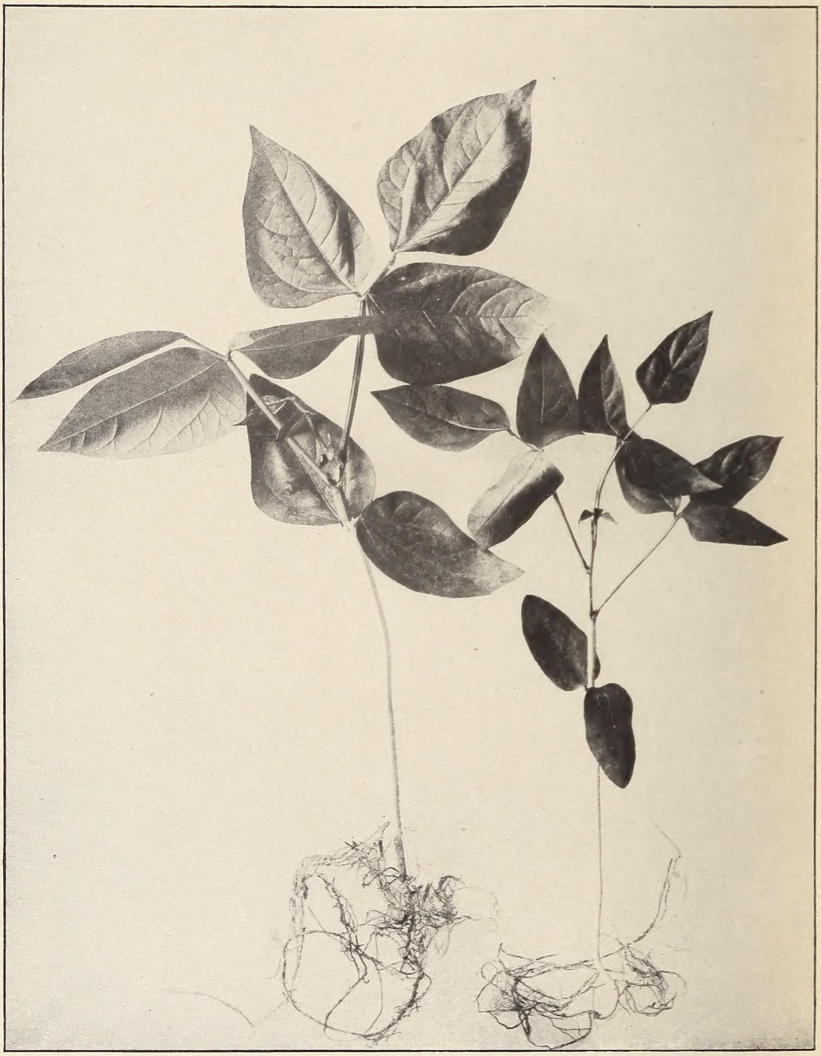
AGRICULTURAL VARIETIES OF THE COWPEA AND IMMEDIATELY RELATED SPECIES.

BY

C. V. PIPER,
Agrostologist in Charge of Forage-Crop Investigations.

Issued February 29, 1912.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1912.



SEEDLINGS OF COWPEA (LEFT) AND CATJANG (RIGHT), SHOWING RELATIVE SIZE.

(One-half natural size.)

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BUREAU OF PLANT INDUSTRY.

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MAR 20 1912

LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Bureau of Plant Industry,
Office of the Chief,
Washington, D. C., July 3, 1911.

Sir: I have the honor to transmit herewith and to recommend for publication as Bulletin No. 229 of the series of this Bureau the accompanying manuscript, entitled "Agricultural Varieties of the Cowpea and Immediately Related Species." This paper has been prepared by Prof. C. V. Piper, Agrostologist in Charge of Forage-Crop Investigations.

The cowpea is now the most important legume grown in the cotton States. At the present time about 15 varieties of this crop are in common cultivation in these States. The varieties grown in a small way number perhaps twice as many more. Owing to the fact that the seed is still largely hand picked, the tendency is for whatever variety was first introduced in a locality to persist. The increased commercial handling of cowpea seed in recent years has to a considerable extent changed this condition of affairs, but varieties of relative inferiority are still too largely grown.

In investigating the varieties of cowpeas the effort has been made, with the assistance of the Office of Seed and Plant Introduction, to obtain as many as possible of the existent varieties from all parts of the world, so that a comprehensive idea of them could be obtained with the end in view of determining which are most valuable. In this collection are also included many varieties of the closely related species, the asparagus bean and the catjang. While it is very certain that the list of varieties that have been brought together for comparison and study is far from exhaustive, yet it is believed that the series is sufficiently complete to exhibit all of the characteristics which occur in this group of plants that are likely to be of value either directly or to the plant breeder.

On account of the importance of the cowpea various extensive investigations of the crop have been undertaken by this Bureau. The present bulletin presents the results obtained by a comprehensive study of the varieties, not only of those already occurring in this country, but of numerous lots from abroad obtained mainly by the Office of Seed and Plant Introduction. Largely on the basis of facts ascertained in these studies a great amount of breeding work is being conducted by Mr. George W. Oliver, with the idea of developing improved varieties by combining the best of the traits exhibited. In close connection with this work Prof. W. J. Spillman is studying the Mendelian behavior of the hereditary characters. The work of Mr. W. A. Orton in hybridizing Iron and other cowpeas to develop varieties with high yield of forage and seed, together with resistance to wilt and other diseases, is also closely allied with these investigations.

In the preparation of this paper the author desires to acknowledge the assistance of Mr. W. F. Wight on various botanical problems involved. Mrs. K. S. Bort has rendered much painstaking aid in the compilation of the voluminous notes which have accumulated and in authenticating the specimens which have been preserved each year so that possible errors might be avoided.

Very respectfully,

B. T. Galloway,
Chief of Bureau.

Hon. James Wilson,
Secretary of Agriculture.

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AGRICULTURAL VARIETIES OF THE COWPEA AND IMMEDIATELY RELATED SPECIES.

THE CULTIVATED SPECIES OF VIGNA.

The botanical genus Vigna, to which the cowpea belongs, is closely related to Phaseolus, which includes the common kidney bean. The chief diagnostic distinction is that the keel is only slightly curved in Vigna and is twisted or spirally coiled in Phaseolus. Vigna has also been much confused with Dolichos, which has a keel similar to Vigna but has a terminal stigma, while in Vigna the stigma is lateral. Botanical works contain descriptions of about 60 species of Vigna. Omitting the three cultivated species hereafter mentioned, according to Mr. W. F. Wight, these species are distributed as follows: Africa, 40; Madagascar, 2; Asia, 5; Java, 2; Australia, 2; Hawaiian Islands, 2; South America, 1; and cosmopolitan, 3.

Most of the species of Vigna are annual, but some are perennial. Several are more or less woody. Judging from descriptions alone, very few of the noncultivated species seem to possess any characters that would be desirable for the plant breeder. Thus far, none of the wild species have been grown excepting the common *Vigna luteola* (Jacq.) Benth. (*V. glabra* Savi), cosmopolitan in subtropic regions, and *V. vexillata* (L.) Benth., obtained from Matanzas, Cuba. The latter has the keel somewhat curved and bearing a lateral horn very like that of *Phaseolus calcaratus.* It would therefore seem that the original reference by Linnæus of the plant to Phaseolus is correct.

The cultivated species are three, namely, the asparagus bean, *Vigna sesquipedalis* (L.) W. F. Wight; the catjang, *Vigna catjang* (Burm.) Walp.; and the cowpea, *Vigna unguiculata* (L.) Walp. The differences in the botanical characters by which these species are distinguished are comparatively slight (Pls. I, II, and III) and, furthermore, the species are connected through intermediate varieties. Whether we consider that all the varieties are referable to one botanical species or to more is of little practical importance. All three of them can be readily hybridized, as proved by the work of

Mr. George W. Oliver, and it is not improbable that some or all of the forms connecting these species may, in fact, be hybrids.

The most ancient cultivation of the vignas seems to have been in India and to have spread in prehistoric times to China, the whole of the Malayan region, and probably much of Africa. It was known in southern Europe at least as early as the beginning of the Christian Era.[1] As might be anticipated, varieties received from different sources are in the main distinct, even if the differences in many cases are slight. The very long cultivation of the cowpea in Africa is attested by the fact that the varieties from different parts of that continent are with few exceptions distinct from those grown elsewhere.

The numerous varieties of cowpeas that have become established in America during the past hundred years probably came, in part at least, either from India or China, as the black-eyed and brown-eyed varieties are, and probably always have been, practically the only ones cultivated in southern Europe.[2] In regard to some of the more important varieties, special data will be found in connection with their descriptions.

Notwithstanding the great difficulty in defining clearly the three supposed species, each, nevertheless, represents a group of varieties having much in common. For the present purposes the species may be contrasted as follows:

Vigna sesquipedalis.—Seeds elongated kidney form, 8 to 12 mm. long, their thickness much less than their breadth; pods pendent, much elongated, 1 to 3 feet long, fleshy and brittle, becoming more or less inflated, flabby, and pale in color before ripening, and shrinking about the widely separated seeds when dry.

Vigna catjang.—Seeds small, usually oblong or cylindric and but slightly kidney shaped, 5 to 6 mm. long, nearly or quite as thick as broad; pods small, not at all flabby or inflated when green, mostly 3 to 5 inches long, erect or ascending when green, remaining so when dry or at length becoming spreading or even deflexed.

Vigna unguiculata.—Seeds mostly 6 to 9 mm. long, varying from subreniform to subglobose; pods 8 to 12 inches long, early becoming pendent, not at all flabby or inflated when green.

As thus defined the great majority of the varieties classify readily into one of the three species. In each species there is a wide range of closely similar seed colors, greatest in *Vigna unguiculata*, least in *V. sesquipedalis*. The small seeds and erect or semierect pods of the catjangs are seemingly correlated characters, the erectness of the pods apparently being due in large measure to their relatively small

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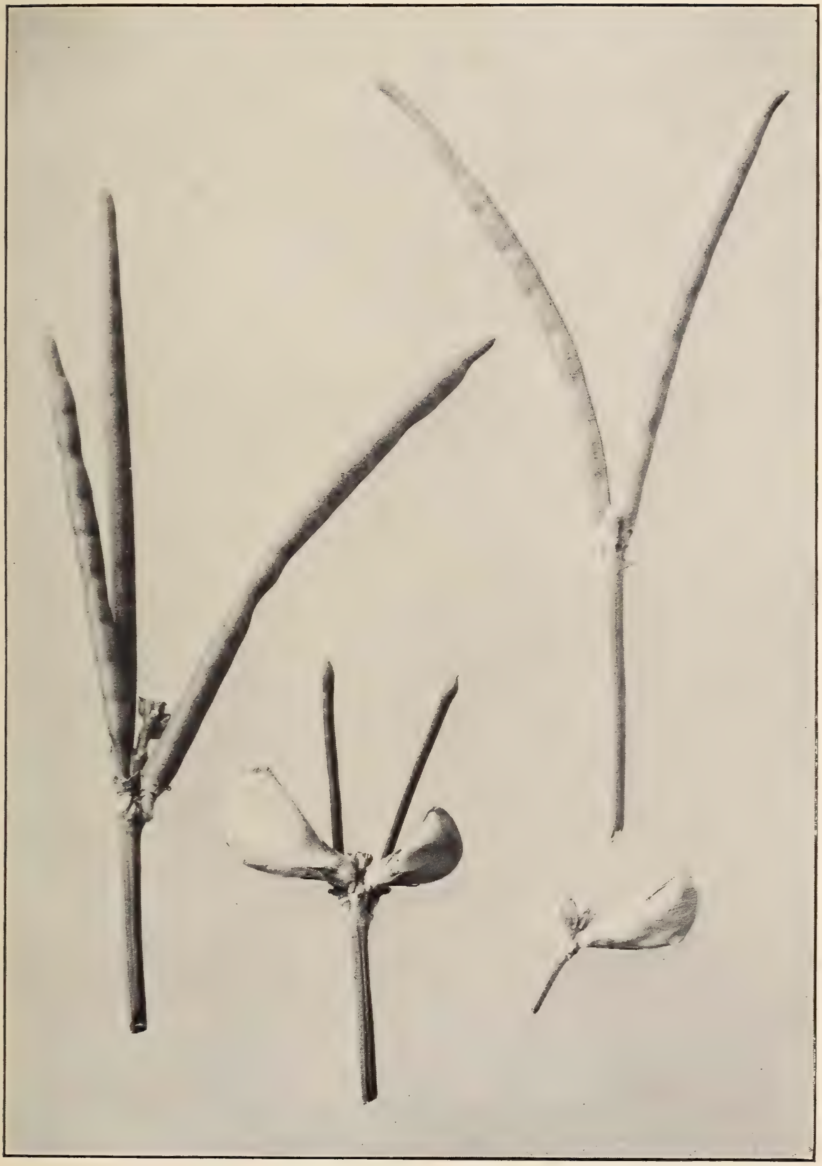
[1] Compare Wight, W. F., Bulletin 102, Bureau of Plant Industry, U. S. Dept. of Agriculture, 1907.

[2] Compare notes given under *Dolichos monachalis*, p. 11.



FLOWERS AND YOUNG PODS OF CATJANG: NO. 11076B ON LEFT, NO. 21508 ON RIGHT.

(Natural size.)

weight. It is an interesting fact that several varieties here referred to *V. unguiculata* that have become naturalized in the South have unusually small seeds. It is quite possible that *V. catjang* and *V. unguiculata* are merely varieties of a single species, the small-seeded varieties only tending to persist when growing wild or constantly subject to weevil attack. It is undoubtedly a fact that the forms with small and hard seeds are less injured by weevils than those with larger and softer seeds. It may, indeed, be true that this one factor tends constantly to eliminate the large-seeded forms when growing wild so that only the small-seeded ones persist.

Of the three species the cowpea is by far the most important, and excepting where specially indicated the following pages particularly refer to this species. Where all three species are considered collectively they are spoken of as "vignas."

THE BOTANICAL HISTORY OF THE CULTIVATED VIGNAS.

In view of the very numerous varieties of cowpeas, catjangs, and asparagus beans, it is not at all surprising that descriptive botanists have confused them greatly. It must be borne in mind that the older botanists had as material for investigation only one, or, at any rate, only a few forms, and were, therefore, unable to judge properly of the weight to be given to each character. The earliest history of the cowpea has been very fully given by Wight.[1] The following data regarding the purely botanical history of the three agricultural species present the conclusions arrived at from the study of the large amount of material we have grown.

ASPARAGUS BEAN.

The asparagus bean was first described by Linnæus, in 1763, under the name of *Dolichos sesquipedalis*. His material came from America, though the plant is undoubtedly native to southern Asia. There could seem to be no question regarding the identity of this species, and no other specific name has ever been given to it. Its proper botanical name is *Vigna sesquipedalis* (L.) W. F. Wight. Martens (Die Gartenbohne, ed. 2, 1869, p. 100) makes the error of identifying it with *Dolichos sinensis* Stickman, which name unquestionably applies to the cowpea. He further quotes *Dolichos sesquipedalis* as a synonym. This species does not seem to have been figured by any pre-Linnæan authors, but a handsome colored plate is given by Jacquin. (Hortus Botanicus Vindobonensis, 1770, vol. 1, pl. 67.)

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[1] Wight, W. F. Bulletin 102, pt. 6, Bureau of Plant Industry, U. S. Dept. of Agriculture, 1907.

COWPEA.

Since the beginning of the use of binomial nomenclature in botany, at least eight different specific names have been given to the cowpea.

(1) The name *Dolichos unguiculatus* L. (1753) was based on plants grown in the Botanic Garden at Upsala, Sweden, the seeds having been obtained from Barbados. Linnæus briefly describes the plant in his Hortus Upsaliensis, 1747, and again in his Species Plantarum, 1753. He states that the seeds were purple black. There can be but little question that Linnæus's plant is the cowpea, but most subsequent authors did not recognize this fact. Even Linnæus himself later (1758) referred to this species Rumphius's *Cacara nigra*, a wholly different plant. The figure of *Dolichos unguiculatus* in Jacquin, Hortus Botanicus Vindobonensis, 1770, volume 1, plate 23, is really that of a catjang.[1]

(2) The name *Dolichos sinensis* Stickman (1759) was based on the excellent description and plate of Rumphius's *Dolichos sinensis*. (Herbarium Amboinense, vol. 5, p. 375, pl. 134.) This is clearly the cowpea, but a very vining variety. Rumphius had a wide knowledge of East Indian plants, but apparently knew but two varieties of cowpea—one with white and the other with reddish seeds.

(3) The name *Phaseolus sphaerospermus* L. (1763) is based primarily on Browne's description of the black-eyed pea (Civil and Natural History of Jamaica, p. 292), and secondarily on Sloane's description in his catalogue of the plants of Jamaica and the figure of the Calavance in his natural history of Jamaica. Both authors give practically the same description, describing the plant as erect. There is scarcely any doubt that the variety is the cowpea known as Blackeyed Lady or sometimes Gallivant, characterized by its small, globose, black-eyed seeds.

(4) Thunberg (Transactions Linnæan Society, 1794, vol. 2, p. 339) gives a brief description of *Dolichos umbellatus*, but does not describe the seeds. He mentions, however, the plant that he had previously described and referred to *D. unguiculatus* L. (Flora Japonica, 1784, p. 279). In this first description Thunberg gives the Japanese name as "Sasage" or "Naga sasage." Under Sasage the Japanese include, according to Useful Plants of Japan, both the asparagus bean (Juroku sasage) and the cowpea (Sasage, Aka sasage, Hata sasage, etc.). To what variety the name Naga sasage refers is uncertain, but Sasage alone seems to be used for vining varieties, especially one with white seeds. To judge wholly by the figure in Useful Plants of Japan, which represents a variety not as yet obtained from Japan, Thunberg's plant would be referred to *Vigna unguiculata*. Among the varieties the Japanese cultivate are forms referable to *V. catjang*, *V.*

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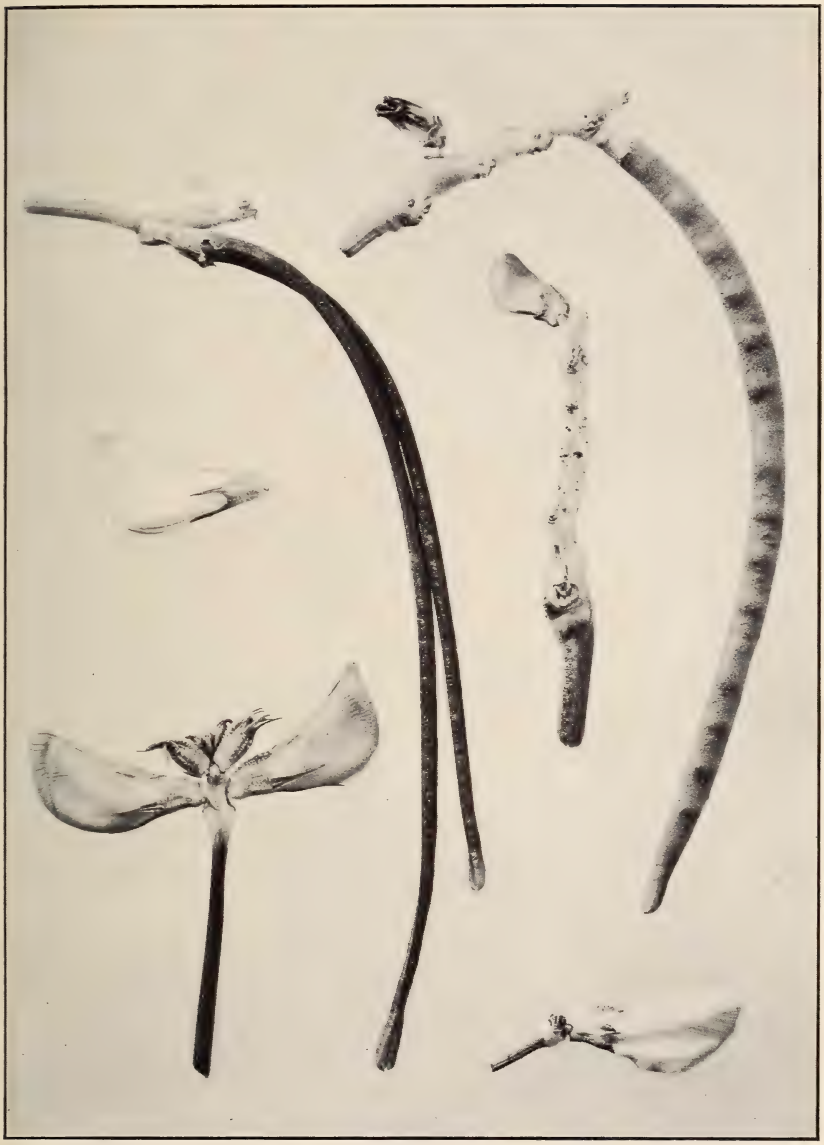
[1] See note on page 143.



FLOWERS AND YOUNG PODS OF THE ASPARAGUS BEAN (LEFT) AND OF THE CREAM COWPEA (RIGHT.)

(Natural size.)

sesquipedalis, and *V. unguiculata*, as well as others that are probably of hybrid origin between these species. It should be pointed out, however, that Maximowicz, followed by Prain (Journal of the Asiatic Society of Bengal, 1897, vol. 66, p. 429), inclines to the view that Thunberg's plant is to be referred to *Vigna vexillata* (L.) Benth.

(5) *Dolichos monachalis* Brotero (Flora Lusitanica, 1804, vol. 2, p. 125), commonly called "Feijao fradibono," is said to be cultivated throughout Lusitania, Portugal. Brotero describes the plants as bushy or but little vining and the seeds as subreniform, 2½ lines broad, 4 to 5 lines long, white or whitish with a black eye. He states that this color is the most frequent, but that varieties with yellowish, red, black, and black-spotted seeds occur. He considers the plant to be either an American degenerate or more likely a hybrid between *Dolichos catjang* and *D. sinensis*, both on account of its close affinity and also "because occasionally, though very rarely, it produces seeds like the parents." Under his description of *Dolichos sinensis*, Brotero says the plant is twining and the seeds whitish, adding that it "degenerates very quickly and is changed into *Dolichos monachalis*." Under *Phaseolus nanus*, he notes that it is a dwarf variety arising under cultivation "just as our *Dolichos monachalis* is a dwarf variety of *D. sinensis*." From these notes there can be practically no doubt that Brotero based his species largely on its bushy form and that his type is one of the common varieties with black-eyed white seeds.

(6) The name *Dolichos melanophthalmus* DC. (1825) is based on a black-eyed variety of cowpea cultivated in Vasconia (Gascony, France, now the provinces of Landes and Gers) and in Italy.

(7) The name *Dolichos oleraceus* Schumacher (1827) is based on a plant from Guinea, West Africa, the seeds of which are described as variegated. It is in all probability a variety of cowpea.

(8) The name *Dolichos bicontortus* Durieu (Actes, Société Linnéeme de Bordeaux, 1896, vol. 27, p. liii) is based on two Japanese varieties, one with buff (fulvous) seeds, the other with red, the pods in both being circinate or coiled. The variety with buff seeds is illustrated by a beautiful colored plate in Flore des Serres, 1873, volume 19, plate 1985. It is very similar to S. P. I. No. 21296A, from Rangoon district, Burma, India. The red-seeded form is certainly the same as No. 29278 from the Tokyo Botanic Garden. The distinction of the curved or coiled pod seems to be of formal value only.

Under botanical rules, the proper name for the cowpea is *Vigna unguiculata* (L) Walp., all of the other names being synonyms.[1]

CATJANG.

The catjang has had a much simpler botanical history than the cowpea, with which many authors have united it as a variety.

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[1] See note on page 143.

(1) Burmann (Flora Indica, 1768, p. 161) gives a brief description of *Dolichos catjang* and refers to Rumphius's description and plate of *Phaseolus minor* (Herbarium Amboinense, vol. 5, p. 383, pl. 139). Rumphius's plate is excellent and there can be no doubt as to the identity of his plant, which was a bushy, nontwining, low variety with black-eyed white seeds. Linnæus (Mantissa, 1771, vol. 1, p. 269) refers to Burmann's description of *Dolichos catjang*, the description and plate of Rumphius above cited, and Rheede's description and plate of the *Paeru* (Hortus Malabaricus, 1688, vol. 8, p. 75, pl. 41). Rheede's figure is without doubt the catjang. He speaks of the seeds being yellowish to red. In the Systema Plantarum, edition 13, 1796, volume 2, part 2, page 1105, the specific name is changed to a Latin form "catianus."

(2) Forskal (Fl. Ægypt, Arab., 1775, p. 133) states that *Dolichos lubia* is frequently cultivated in the fields of Egypt. The plant is described as diffuse and procumbent. The size and color of the seeds are not given but the pods are said to be erect and scabrous. The Arabian name is given as "Lubia baeladi." This plant is probably the catjang, but the scabrous character of the pod is suspicious. No varieties of either cowpea or catjang have been imported from Lower Egypt.

(3) The plant *Dolichos tranquebaricus* Jacquin (Hortus Botanicus Vindobonensis, 1776, vol. 3, p. 39, pl. 70) is beautifully figured by Jacquin from specimens grown at Vienna, the seeds from Tranquebar, Madras, India. It is a twining catjang with purple flowers, blooming late, small pods 2½ inches long, and buff seeds 4 mm. long. It is very similar to, if not identical with, S. P. I. No. 29305.

The technical name of the catjang under botanical rules is *Vigna catjang* (Burn.) Walp.

It is not unlikely that some of the other botanical names under the genera Phaseolus and Dolichos also apply to the above species of Vigna. It probably would require an examination of the original specimens to determine this positively. Some botanical authors have considered that the catjang and the cowpea are mere varieties of the same species, and have thus classified them. Exactly the same arguments, however, apply to the asparagus bean. As a matter of convenience it would seem preferable to maintain all three as species, though a complete series of connecting forms exists.

Besides the above three species of Vigna two others have been reported to be cultivated. One of these is *Vigna nilotica* Delile, which Sir J. D. Hooker (Niger Flora, p. 311) says occurs in Lower Egypt, Nubia, Abyssinia, Senegambia, German East Africa, Mozambique, and also in Syria, adding that it is known as "mash" by the Arabs. The original description of this plant was by Forskal, who erroneously referred it to *Dolichos sinensis*. He states that it occurs in wet fields in Egypt near the Nile, the roots frequently being immersed. Delile later published a beautiful figure of the plant, and states that it is abundant in Egypt on the borders of the Nile, especially about Byrimbal (Berimbal) and Metoubis (Matubis). Delile's figure, as well as authentic botanical specimens, shows this species to be very different from any of those described above and easily recognizable by its small, sharp-pointed, hairy pods, which are borne in clusters of 5 to 10. It seems not unlikely that Hooker confused the cowpea with this species, as the cowpea is abundantly cultivated throughout Africa, and thus far we have not obtained *Vigna nilotica* from any source.

Under *Vigna capensis* Walp., Hiern (Catalogue of African Plants collected by Welwitsch, 1896, vol. 1, p. 257) gives a field note of Welwitsch on a single specimen to the effect that this is planted in fields of sugar cane near Boa Vista, Portugese West Africa. It is quite likely that this particular specimen is really the cowpea, as this is commonly grown by the natives in Africa. Two different plants have been named *Vigna capensis*, both from South Africa, where no botanist has spoken of them as being cultivated plants.

The treatment of the agricultural varieties of cowpeas and catjangs by botanical writers is very diverse. Hasskarl, 1842 (Flora, 25th year, vol. 2, Beiblätter, pp. 50, 51), calls the cowpea *Dolichos sinensis* and describes four varieties: Ater with black seeds; rubiginosus with reddish seeds; elongatus with pods 14 to 18 inches long and punctulate reddish seeds; and maculatus with reddish seeds spotted with chestnut. His "var. elongatus" is perhaps a variety of asparagus bean. Miquel, 1845 (Flora Indiae Bataviae, vol. 1, p. 187), adopts all of Hasskarl's varieties under *Vigna sinensis*. Voigt, 1845 (Hortus Suburbanus Calcuttensis, p. 232), apparently unites the cowpea and the catjang under one species, *Dolichos sinensis*, calling the former "var. eccremocarpus" on account of its pendulous pods and the latter "var. orthocarpus" owing to its erect pods. Martens, 1869 (Die Gartenbohne, ed. 2, p. 99), takes up DeCandolle's name *Dolichos melanophthalmus* for the black-eyed cowpea and describes as "var. oryzoides" a buff-seeded form he obtained in Venice. As a subvariety of this he also mentions a brown-seeded form from Berlin, Lisbon, Tivoli, and Stuttgart. For the asparagus bean he erroneously adopts *Dolichos sinensis* in preference to *D. sesquipedalis*, and under it lists the four varieties of Hasskarl mentioned above. Martens's conception of *Dolichos catjang* L. is given under four different varieties, viz, niger, rufus, luteolus, and variegatus. The first two are catjangs mentioned by Louriero (Flora Cochinchinensis, vol. 1, p. 539) under the vernacular names "Dau den" and "Dau dea," the former with black, the latter with reddish seeds; var. luteolus is *Vigna luteolus* Jacquin, a perfectly distinct species; var. variegatus is based on seeds secured in Berlin, the seeds being yellowish sprinkled with dark specks.

DESIRABLE CHARACTERS IN VARIETIES OF COWPEAS.

The numerous varieties of cowpeas exhibit a considerable range of characteristics, but owing to the indeterminate nature of the plant's growth, and the great fluctuating variations caused by soils or season, the characters are often obscured. The characteristics that are most important in the cowpea when considered purely as a forage crop are as follows:[1]

1. Size and vigor.
2. Habit, especially erectness and height.
3. Prolificness.
4. Disease resistance.
5. Weevil resistance of seeds.
6. Ability to retain leaves late in the season.
7. Time of maturity, or life period.
8. Evenness of maturity.

From our present knowledge of the cowpea we would define the ideal forage variety to be planted alone as follows: Tall; vigorous; bushy in habit; leafy, the leaves persisting late; prolific, the pods well filled and held well above the ground; the seeds hard and therefore rather small; medium early, maturing in 80 to 100 days; and immune from or resistant to serious diseases. Toward the north earlier maturing is desirable. For planting in corn or sorghum, a strong vining habit is an additional desideratum. Fortunately, some varieties are half bushy when planted alone, but sufficiently vining where a support is available. Where cowpeas are to be used as human food or to be pastured by hogs, the yield of pods and seeds is most important, the erectness of the plant being a secondary consideration.

A number of existing varieties, as Whippoorwill, New Era, and Iron, approach the foregoing ideal. There can be little doubt that by the judicious crossing of these and other varieties this ideal, or any similar one, can be closely realized.

The seeds of white or nearly white cowpeas usually sell for a higher price than do other varieties, owing to the fact that they are used as a table vegetable. It is therefore desirable, if possible, to develop a first-class forage cowpea with white or nearly white seeds. Unfortunately, none of the white or nearly white seeded varieties have the habit most desired in a forage cowpea. The crosses thus far made to develop such an all-purpose cowpea are not satisfactory, but the end is worthy of much more effort.

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[1] Compare Galloway, B. T., Yearbook, U. S. Dept. of Agriculture, for 1908, p. 147.

It is doubtful if any of the very late varieties of cowpeas, which means those that require, under American conditions at least, 120 days to mature their first pods, will find a place in our agriculture. According to Prof. P. H. Rolfs, a very late cowpea that could be planted in May and would not mature until late September would be desirable in Florida, as it would shade the ground during the summer and mature at the best season for curing hay. A large number of very late varieties were tested in Florida in 1909 with this end in view, but none proved satisfactory, and it seems probable that other legumes will meet the need much better than cowpeas.

VARIABILITY OF THE COWPEA.

Under different conditions of soil or climate most varieties of the cowpea exhibit marked fluctuating variations. On rich soil, or when planted early, the general tendency is to produce a large amount of vine and but few pods. Unusually moist seasons seem to have the same effect. On poor and especially on sandy soils, or when sown late, the plants tend to be much more prolific of seed and to produce decidedly less herbage. Moderate drought has a very similar effect. Very severe drought, however, prevents most varieties from producing pods. Thus, at Chillicothe, Tex., in 1910, the drought was so severe that such varieties as Whippoorwill, Brabham, Groit, Iron, and others produced scarcely a pod, though making fair vegetative growth. In marked contrast, Blackeye No. 22050 produced a good crop of pods. A number of varieties, like New Era and Whippoorwill and to a less extent Iron, are half bushy when grown thickly. When grown isolated, all these will produce long, trailing branches and be decidedly decumbent; when planted in corn their vining character is accentuated. These fluctuating variations are so marked, the number of varieties of cowpea so large, and the seed so often mixed that the idea has not unnaturally arisen that the cowpea is in an almost continuous state of change, new varieties arising constantly, many of them not permanent. This idea has been upheld by a number of writers on cowpeas, but in no case has satisfactory evidence of its truth been advanced.

A few varieties, such as Whippoorwill, New Era, Iron, and others, have been well known for at least a decade. If these were constantly varying, we should expect that seeds from different sources would yield different looking plants. To test this, seeds of Whippoorwill were obtained from the following different sources: Richmond, Va.; Fayetteville, Ark.; Hickory, N. C.; Newbern, N. C.; Felton, Del.; Memphis, Tenn.; Blodgett, Mo.; and Coulterville, Ill. These seeds were planted in 1908 at Arlington Farm and grown in comparison with a strain of the same variety that has been grown at Arlington for five successive years. A careful study of these plants during the season failed to show any marked differences. They were as nearly identical both in habit and time of maturity as the plants of the same variety that had been grown at Arlington Farm for the preceding five years.

In 1909 seed of Whippoorwill or supposed Whippoorwill was obtained from 101 additional sources in the following States: Virginia, North Carolina, South Carolina, Alabama, Mississippi, Georgia, Louisiana, Oklahoma, Texas, and Arkansas. These were planted in rows at Arlington in 1910 for comparison with several pedigreed lots that had been grown there for at least three years. With a few exceptions, the striking thing about these lots was their exceedingly close likeness with respect to habit, size, and date of maturity. Indeed, it was difficult to select rows that showed any evident superiority. There can be no question as to their representing the same agricultural variety. No evidence whatever was shown in these lots of any tendency for northern-grown seed to mature earlier or for extreme southern-grown seed to mature later. Six numbers of the lot were found to be somewhat earlier and of lower stature, and these all proved to have diverse seeds, varying in some cases from marbled to brown, even in the same pod. As this is exactly what occurs in certain Whippoorwill crosses, the hybrid origin of these lots is scarcely to be questioned. Indeed, they match certain known hybrids of Whippoorwill almost exactly. Two lots were identical with Peerless, S. P. I. No. 26495, the seeds of which are scarcely distinguishable from Whippoorwill. One lot, Office No. 01122, from Brookhaven, Miss., was so late that it matured no pods. This is almost certainly the same as S. P. I. No. 25369.

The evidence, therefore, indicates that Whippoorwill is a very uniform variety, but that at least two other varieties, namely, Peerless and No. 25369, have practically identical seeds.

Of the New Era variety, seven lots from different sources were tested in 1908 and several additional lots in 1910. They all proved to be identical in size, habit, and life period.

Black-seeded cowpeas with subreniform seeds, so far as American sorts are concerned, belong mainly to two varieties, Early Black or Congo, S. P. I. No. 17336, and Black, No. 29292. Forty-nine lots of seed were obtained in 1910 from as many different sources, and most of these belong to one or the other of these two varieties. Indeed, only two of the lots are really different, S. P. I. No. 29302 and Office No. 01054. Some slight degree of difference is shown in the maturing of the various lots of Black and of Early Black, amounting to about a week in each case. Such differences may be permanent or merely fluctuations.

In a few instances it has been noted that varieties of cowpeas which matured together in one season showed differences in another season; thus, Blackeyes Nos. 17335, 17329, and 22050 all matured together in 1909. In 1910, No. 17335 was ten days later than No. 22050 and five days later than No. 17329. Such differences have not, therefore, been considered of varietal value unless accompanied by other characters. In the case of these three black-eyed varieties the difference in time of maturing seems quite clearly a fluctuating variation, but it is by no means certain that all or most such differences are of this character.

With buff-seeded cowpeas the case is far more complicated. Lots of buff-seeded kidney cowpeas obtained from 142 different sources in the States of Virginia, North Carolina, South Carolina, Alabama, Georgia, Florida, Mississippi, Louisiana, Arkansas, Indiana, and Kansas were planted in 1910 and compared with about 20 lots previously obtained. After eliminating several lots identifiable with Iron and two lots that proved to be Cotton Patch, the remainder showed great similarity in habit but varied greatly in their life periods and correlated size. They could be fairly well classified into four groups as regards their time of maturity—early, medium, medium late, and late—requiring respectively about 70, 80, 90, and 115 days to mature their first pods. The early lots are apparently identifiable with what has been commonly known as Warren's Hybrid or Warren's Extra Early; the medium and medium late make up most of what is currently known as Clay; while the late is what is known for the most part as Unknown or Wonderful. It must be admitted that each of these groups shows much more variability in life period than Whippoorwill, for example. Indeed, almost every period of maturity was represented in the series, from the earliest to the latest. A number of lots in each group might properly be considered distinct varieties except for the fact that, under Arlington conditions at least, the difference amounted principally if not wholly to a few days more or less in time of maturing. It would require several years' testing to determine whether these differences in life period are permanent or only transitory.

Most American cowpeas with maroon kidney-shaped seeds go as Red Ripper. About forty different lots with such seeds were tested in 1910. These clearly represent at least eight distinct varieties by habit and seed characters. If slight differences in life period are considered, twice as many varieties could be distinguished. Great discrepancies in published data concerning the Red Ripper are, therefore, to be expected, and unquestionably several different varieties have been used by different experimenters under this name.

It is quite possible that marked differences in earliness, prolificness, etc., may be developed in any variety by selection either natural or artificial, but no good evidence of any such change has yet been shown where selection does not enter. It is doubtful, indeed, how much selection alone will do toward improving the cowpea. But little work has been done along this line so far, because hybridizing has seemed to offer better promise.

It must not be assumed from the above discussion that a variety should be of equal value regardless of soil or climate. On the contrary, it is perfectly certain that varieties that are valuable in certain parts of the country are of distinctly less value elsewhere. For example, the Brabham cowpea, a new variety, has proved its high value in the sandy lands of South Carolina, Georgia, and Florida, in the semiarid lands of the Texas Panhandle, and elsewhere. Farther north it is unreliable, tending to go largely to vine. This was also the experience with it on the rich muck lands near Stockton, Cal. At Arlington Farm it produced very little seed in 1908, a normal season as to rainfall, while in 1909, an abnormally dry season, it was at least equal to the best of over 100 varieties grown. A study of the data accumulated regarding this variety points to the conclusion that it has too great vegetative vigor under favorable conditions to seed heavily and that the retarding effects of comparatively poor soil or of light rainfall are necessary to make it highly productive of fruit. On the other hand, it is well to remember that such well-known varieties as the Whippoorwill and New Era are grown with satisfaction over a wide area with many different soils and climates.

In apparent contrast to the above conclusions, Newman[1] records that different lots of seed of Whippoorwill, Clay, Unknown, Black-Red Ripper, New Era, and Blackeye gave greatly different results as regards yield of hay when planted side by side. Thus different lots of Whippoorwill varied in yield per acre from 1,300 to 2,200 pounds; Clay, 3,800 to 8,700; Unknown, 3,300 to 7,000; Red Ripper, 2,300 to 4,600; New Era, 700 to 1,900; Blackeye, 700 to 4,000. Prof. Newman hazards the suggestion that these wide variations in yield are—

> probably due, in part at least, to the greater or less adaptability of the soil or climate, or both, where the tests were made as compared with the soil and climate where the seed was grown. Another cause for the variation may be due to the development of strains of the different varieties from their having been grown in certain localities for a number of years.

The point is one of importance and needs to receive further attention. The testing work at Arlington has in no case, where the identity of the variety was certain, shown any notable variations in size or vigor of the plants.

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[1] Bulletin 80, Arkansas Agricultural Experiment Station, p. 73.

DISTINCTIVE CHARACTERS OF COWPEA VARIETIES.

The distinguishing characters of cowpea varieties are, except for the color of flowers and color and shape of the seeds, subtle and difficult to define. In the descriptions here given the following categories of characters are considered and their various differences defined as indicated.

HABIT OF PLANT.

The different varieties of cowpeas show every possible habit stage from perfectly prostrate to perfectly erect. With a very few exceptions the branches are viny and also twining, at least toward the tips. Notwithstanding the great differences in habit the type of branching is the same in all the cultivated vignas. The great differences displayed are dependent primarily on the degree of development of the branches. The development of the lower or basal branches is much greater when the plants are isolated. When growing close together the development of these branches is inhibited or else they become ascending, due to crowding and shading. For comparative purposes it is perhaps most useful to consider the type of habit exhibited by a variety when planted in rows 2½ to 3 feet apart, a common method of planting. When planted in corn the vining habit of the plant becomes more greatly developed and when sown thickly broadcast the bushy habit predominates. For convenience five types of plants as to habit may be recognized and defined as follows:

1. *Prostrate.*—The whole plant lying prone on the ground.
2. *Procumbent.*—Stems and branches weak, forming a low, flat mass. When planted in a row the mass of vines is two to four times as broad as high.
3 *Low, half bushy.*—Mass of vines in rows once to twice as broad as high; basal branches prostrate or but slightly ascending; pods, therefore, held low, many of them touching the ground.
4. *Tall, half bushy.*—Main axis tall and comparatively stout, usually twining at top; branches mostly ascending, few, if any, prostrate; pods, therefore, held comparatively high. Examples, Whippoorwill and New Era.
5. *Treelike or erect.*—Main axis tall, erect, twining not at all, or only at the top; branches mostly short, the long basal ones being absent or only occasionally found.

Unsatisfactory as this or any such classification may be, it nevertheless indicates with a reasonable degree of clearness the range of habit exhibited by the cultivated vignas. All these characters show much variation due to vigor, stoutness, and richness of branching, in which there is practically every possible step represented in our series. The most important characteristics from an agronomic standpoint are height, vigor, and prolificness. Practically all of the really valuable varieties fall in groups 3, 4, and 5, the very best being in group 4. The ideal habit for field use would seem to be exhibited by the more vigorous arborescent varieties, such as catjangs Nos. 21292, 21602, and 22759, but unfortunately the best of these are very late and, under American conditions at least, not prolific. The procumbent and prostrate varieties are of little value except for use as pasture or as a cover crop. It would seem highly improbable that the seed of any of these last could ever be grown cheaply enough to compete with the half-bushy varieties, notwithstanding that several of the procumbent sorts, such as No. 21006, are the most vigorous growers of all.

There is often marked difference in the appearance of plants growing isolated and those of the same variety when more or less crowded. This is especially marked in the half-bushy varieties. In these the basal branches grow inordinately when the plants are isolated so that the result is a procumbent mass. On the contrary, when the plants are grown close together the development of the basal branches is usually much inhibited and the main stem is correspondingly taller so that the plants are much more bushlike in habit. In the varieties that are normally procumbent or prostrate this effect is much less marked, as the vines of such varieties are seldom stiff enough to hold up. The few truly upright (arborescent) varieties, which have no trailing basal branches, seem to maintain this character whether growing isolated or close together.

STEMS.

The stem possesses very few characters which are of value as distinguishing marks. Such differences in stoutness as exist may be characterized by the terms coarse, medium, and fine. The color of the stems is correlated with that of the leaves. Thus, pale stems are associated with pale leaves and purple stems with purple leaves, but the stem may show all degrees in the extent of purple color. The coloring is most common at the nodes and on the peduncles. A small amount of purple in the stems may or may not be associated with purple coloration in the leaves even in the same variety. The first cold nights of autumn not only cause an increase in the amount of purple coloration but also cause it to appear in varieties where it was not before evident, especially on young pods.

LEAVES.

Economically, the most important leaf character is the ability to persist on the vines till the pods are mature. This is very characteristic of the Iron variety. Other characters observable but difficult

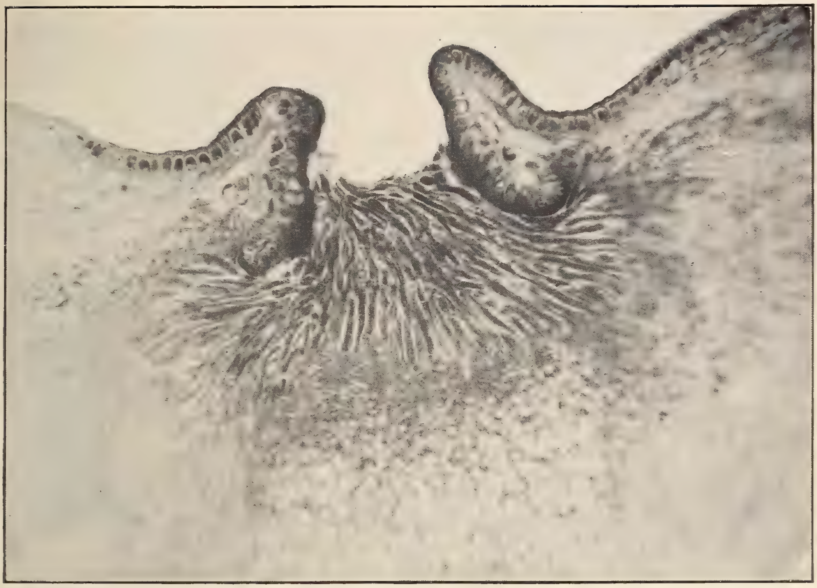


FIG. 1.—PHOTOMICROGRAPH OF A SECTION OF EXTRA-FLORAL NECTARY OF THE COWPEA FLOWER. FROM A SECTION PREPARED BY DR. ALBERT MANN.

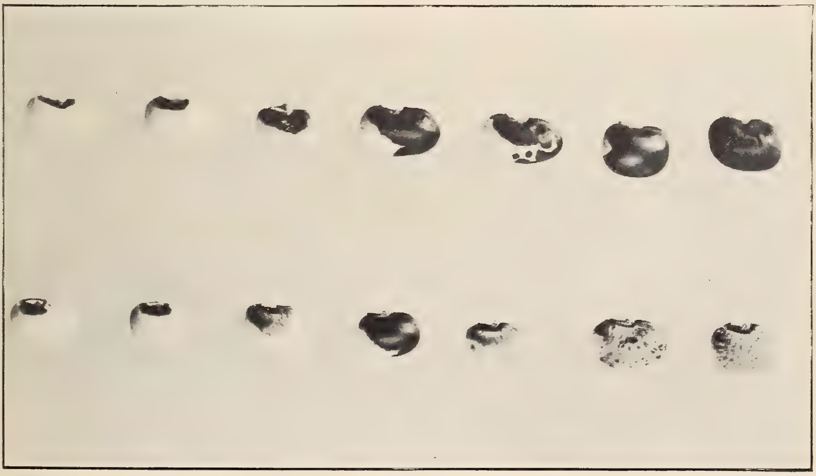


FIG. 2.—TWO SAMPLES EACH OF SEVEN VARIETIES OF COWPEAS, SHOWING THE DIFFERENT TYPES OF COLOR DISTRIBUTION.

(Natural size.)

to define are the size of leaves, varying from small to very large; color, ranging from very pale to very dark; and number, varying from few to very numerous, the number being correlated with the length of the internodes. Such characters are of definitive value only when approaching one extreme or the other. In a few cases closely related varieties may be distinguished by the leaf surface; for example, Iron has nearly plane leaves, while most other buff-seeded varieties have leaves decidedly undulate.

FLOWERS.

The flower of the cowpea occurs principally in two colors: White, or nearly white, and pale violet or purple, in each case the eye being yellow. The violet color merges by almost insensible degrees to the white. The back of the standard is paler and often yellowish in the white flowers or greenish in the violet. White flowers are mainly associated with white or partly white seeds. The violet-flowered sorts are far more numerous.

SEEDS.

Seeds of cowpea varieties differ in color, shape, and size. These seed characters are by far the most useful by which to distinguish varieties. Unfortunately, however, there are many examples of perfectly distinct varieties whose seeds are indistinguishable. On the other hand some varieties are distinguishable only by the seeds.

Color.—The seeds of all three species of Vigna have practically the same range of colors. These may be classified into two groups, (1) those in which the coloration is not uniform over the whole seed and (2) those in which the color or pattern is uniform.

Seeds whose color or color pattern is not distributed over the whole surface exhibit four types of variation:

(1) Spotted, with round or roundish spots.
(2) Marbled, with spots elongate and running together, as in Whippoorwill.
(3) Speckled with minute dots; as, for example, in Taylor and New Era.
(4) Marbled and speckled; as, for example, in Groit.

The commonest type has the second color concentrated about the hilum, as in Blackeye, Browneye, etc. The term hilum as here used refers to the scar at the place where the seed was attached to the pod. It is always nearest the chalazal end of the seed and is lanceolate in outline, the broad end being next to the micropyle. The hilum is always whitish in color, excepting its sides, which are nearly always dark olive. In most cowpeas the raised circle about the hilum is different in color from the body of the seed, in which case it is referred to as the iris. This "eye spot" varies in different varieties from small (in seeds designated "eyed") to very large (in "saddled" seeds).

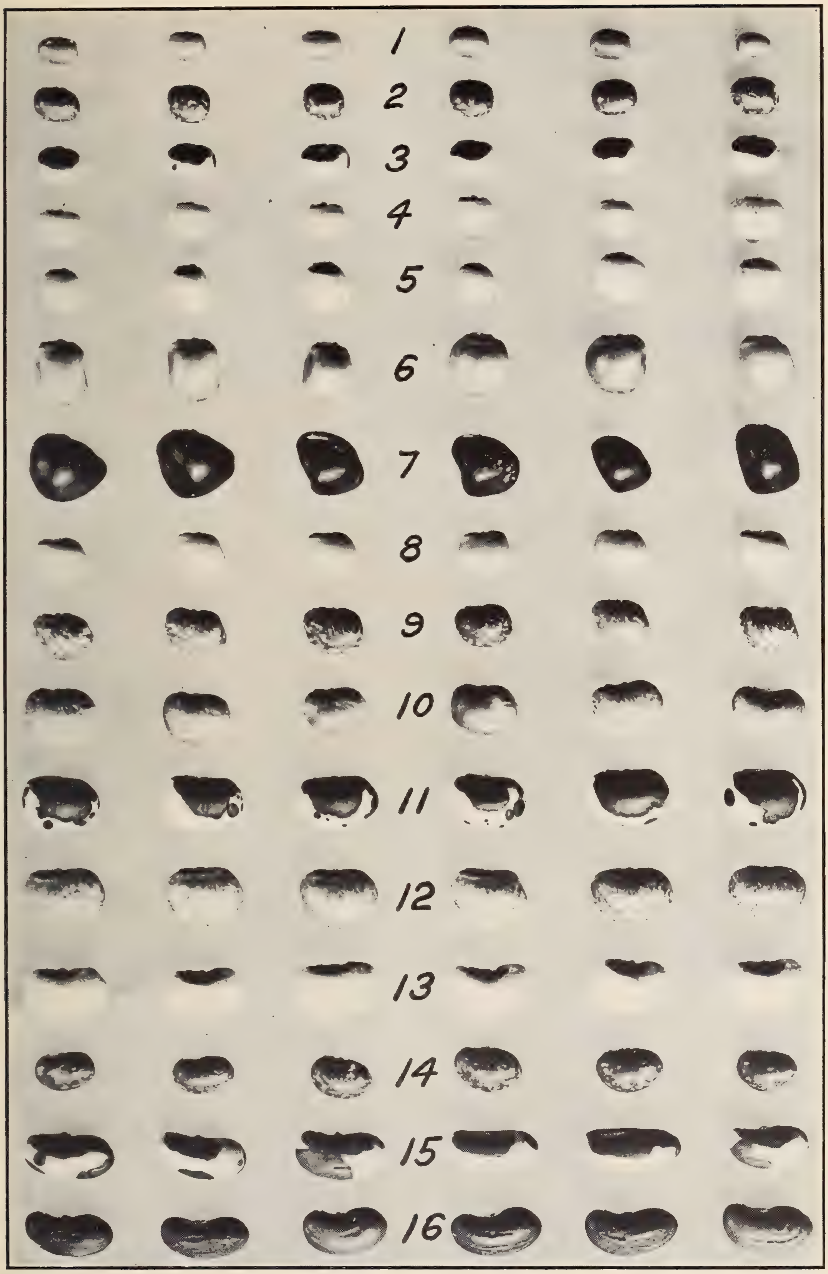
Where a larger area is colored, the color tends first to cover the micropylar end of the seed. A third extension of the colored area appears usually in isolated blotches of varying size and position as in Holstein No. 22725 (Pl. V). In the fourth type the whole seed is colored excepting the chalazal end (Pl. IV, fig. 2). In these various distributions of the second color it is to be noted that speckling and marbling both behave in the same manner as a single color.

Marbling, so far as known, occurs in but four combinations—brown on a buff ground, brown on pink, black on red, and buff on black. Speckling occurs as blue (diluted black?) on buff and brown on buff. Three varieties, Groit, No. 29295, and No. 11076B, have a combination of both marbling and speckling.

That these color distributions are really definite types would seem to be proved by the fact that each type occurs in several different color combinations and that no other types of color distribution occur. The known results from hybridizing are all confirmatory of the above conclusion.

In unicolored seeds buff or clay occurs in more varieties than any other color, followed by black and by maroon, respectively. The other colors are represented by only a few varieties each. These are all intergrades from white to yellowish, buff to pink, and pink to maroon. Black in all cowpeas is really very dark violet, as may be seen in immature seeds or in seeds that for any reason have ripened prematurely. Furthermore, certain hybrids with black as one parent have violet-colored seeds by dilution of the black. In several cases of varieties having bluish or purplish seeds the color is not uniform in shade, the depth or amount of color varying on different seeds or in different parts of the same seed, or both. The presence of a small amount of black blood in buff-colored varieties of hybrid origin is often indicated by occasional seeds having splotches of violet, especially on the ends. Some hybrids with black exhibit a dirty gray or dirty violet black with a granular appearance; as, for example, Watson. At times this granular coloration is similar to the speckling found in Taylor, but certainly is not the same. From various hybrids that have been made there are suggestions as to other interrelations of the colors that occur, the complete elucidation of which will require much investigation.

Some suggestions may be hazarded as to which of these colors or color patterns are primitive. The evidence would seem to indicate that black, black-eye, marbled, and speckled are all fundamentally different, and it is doubtful if any one of these can be derived by combination of pure strains of the others. The same may be true of white, cream, and maroon. Buff can be obtained by crossing marbled and speckled, some of the hybrids losing the markings and



Seeds of Sixteen Varieties of Vigna, Showing Range in Variation of Shape, Size, and Color. The Top Three Rows Are Catjangs, the Bottom Two Rows Are Asparagus Beans, and the Others Are Cowpeas.

Beginning with the top row, the varieties are as follows: No. 21934, Upright; No. 21603B; No. 21293D; No. 0625H; No. 17420, Blackeyed Lady; No. 17406, Michigan Favorite; No. 22052, Black Crowder; No. 17430, Iron; No. 27867; No. 22721, Sport; No. 22725, Holstein; No. 17342, Taylor; No. 27548, Ram's Horn Blackeye; No. 22746; No. 25149; No. 25148.

(Natural size.)

having only the buff ground color left. Much additional work is necessary to determine all these points with certainty.

The colors of the seeds as here given are based on fresh, uninjured seeds. Old seeds become much darker, so that buff, pink, and maroon finally may become indistinguishable. Where the ripe pods have been frequently wet by rains and covered with black mold, the seeds also become discolored, usually yellowish or brownish. The terminology used for the colors is based on Ridgway's Nomenclature of Colors.

Shape.—Cowpea seeds may be conveniently if not very clearly put into five categories as to shape—reniform or kidney shaped, subreniform, oblong, rhomboid, and globose. In some varieties the whole seed is rounded and plump, in others the sides may be shrunken so that the back of the seed is more or less conspicuously "keeled." The seed coat is usually smooth, but often transversely and finely wrinkled, especially in white or nearly white seeds. As both smooth and wrinkled seeds may occur in the same pod, the character has little distinctive value except in a few cases.

The shape of the seed is closely correlated with that of the pod. Where the seeds are separate from each other while developing they are invariably reniform or subreniform, more elongated or less in proportion to the distance they are apart. Where the seeds touch each other while growing, flattened ends and usually a more oblong shape result. If the seeds are crowded so closely that they become cuboid or rhomboid, such varieties are designated as "half crowders." Where the seeds are closely crowded while developing they become when mature either globose or compressed. Such pods and varieties are called "crowders." Crowder pods are commonly cylindric in form or else broader than they are thick, and the pod is usually of rather thick and brittle texture. It must be borne in mind that the seeds are largest just before they mature and it is the pressure at this time that in the main determines their form; hence, considerable variation in the shape of seeds may be noted even in the same pod, depending on the position in the pod and the amount of pressure experienced.

Size.—The size of the seeds from the smallest catjangs on the one hand to the Taylor variety, the largest extreme on the other, is well shown in the illustrations. To some extent these also show the variation in size in each variety. This variation may be considerable even in different pods on the same plant. The latest formed and therefore half-starved pods are often undersized, with correspondingly small seeds.

PODS.

The general interrelations of seeds to pods have been already described. The shape of the pod is usually curved or falcate. In some varieties, however, it is practically straight and in a very few coiled into one or even two complete turns. (See Nos. 21296A and 29278 in Pl. VII.)

In most varieties of cowpeas the pod is more or less torulose; that is, constricted between the seeds. In others, however, the pods are terete, not at all torulose. The color of the mature pods is drab in a comparatively few varieties, straw yellow in most. In the latter case the yellow may be more or less tinged with purple, a few varieties having uniformly purple pods. In such cases the purple coloration is usually evident in the immature pods also. In at least one variety, No. 25786, the pod is yellowish with short, linear, purple splotches.

Most varieties of cowpeas do not shatter their seeds at all. Some, however, dehisce much more easily than others, this character being usually associated with thin pod valves, which sometimes become coiled after separating. In a few of the catjangs the pods shatter much like vetches, the valves coiling immediately into a close spiral. The most marked example of this is No. 21565A. (Pl. VI.)

LIFE PERIOD.

There is a wide variation in the time required for different kinds of cowpeas to mature. Furthermore, accurate comparisons are difficult, because the period of fruiting extends over a considerable length of time, which varies according to the season. Perhaps the safest basis of comparison is the ripening of the first pod, which is usually about 10 to 15 days before most of the pods ripen. The earliest cowpea known to us is No. 29282, which ripens its first pods at Arlington Farm in 65 days. Varieties called early usually require 80 days or more. Whippoorwill matures its first pods in 82 days. The latest varieties that mature at Arlington Farm require 130 days, but many of the lots received from tropical sources do not even bloom under Arlington Farm conditions.

The length of time between planting and the ripening of the first pods also varies with the time of planting. Thus, Mooers[1] found that the Whippoorwill varied in time from planting to maturity as follows: Planted April 15, 183 days; May 1, 168 days; May 15, 153 days; June 5, 132 days; June 17, 113 days; June 29, 101 days.

The life period also varies in some cases from season to season, not only in actual period of time but in comparison with other varieties, as before mentioned.

MALFORMATIONS.

Cowpea leaves with four or five leaflets are by no means uncommon. The small amount of evidence available indicates that this character is to some degree hereditary, probably comparable in this

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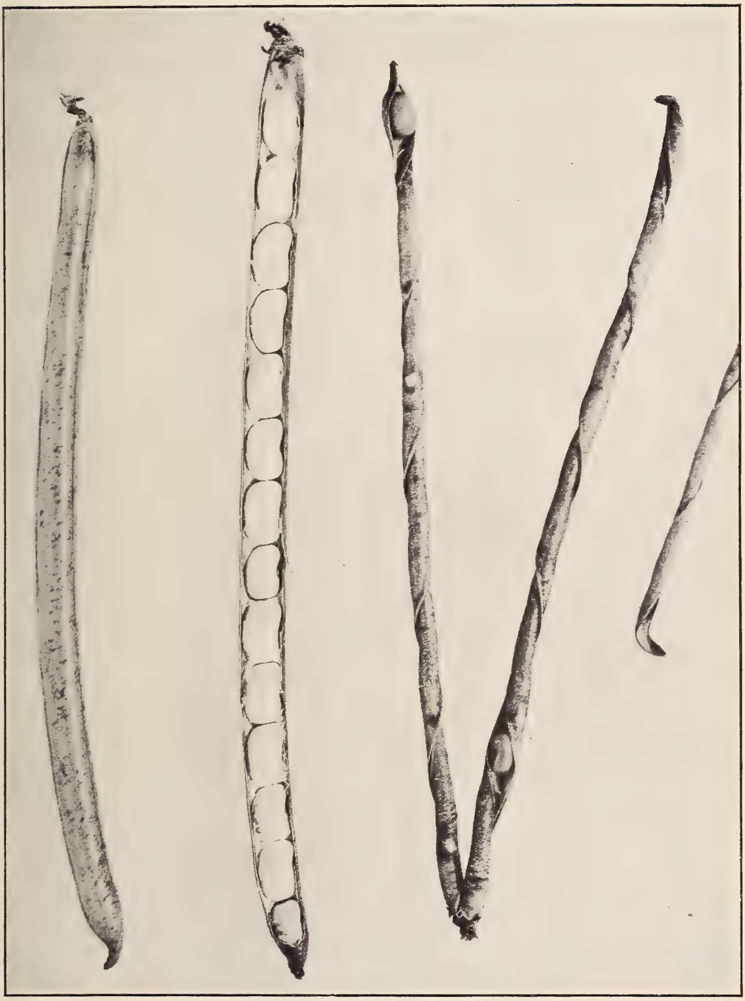
[1] Bulletin 82, Tennessee Agricultural Experiment Station.



PODS OF CATJANG NO. 22888.

(Natural size.)

respect to the heredity of the 4-leaved and 5-leaved clover plants as determined by De Vries.

A rare malformation of the leaves among cowpeas is the formation of pitchers or ascidia. Some illustrations of these curious growths are shown in Plate VIII.

SUSCEPTIBILITY AND RESISTANCE TO DISEASES.

The cowpea is affected by a considerable number of diseases, the most common being wilt (*Neocosmospora vasinfecta* var. nivea Erw. Sm.); root-knot caused by the nematode worm (*Heterodera radicicola* (Greef) Müll.); rust (*Uromyces phaseoli*); white leaf-spot (*Amerosporium economicum*); red leaf-spot (*Cercospora cruenta*); and mildew (*Sphaerotheca* sp.). Root-knot and wilt are so common throughout much of the cotton belt that most cowpea varieties suffer serious damage. The Iron variety and some recently bred hybrids of Iron are completely resistant to these diseases, and only such should be grown where these diseases prevail. (See Webber and Orton, Bulletin 17, Bureau of Plant Industry, United States Department of Agriculture.)

Rust is a disease to which most standard American varieties of cowpeas are immune. Many recently imported varieties, especially from China and India, are, however, very susceptible to this disease and suffer severe injuries from it. That other varieties are completely immune to rust would appear from the fact that they are never affected even when growing contiguous to a rusted variety on the same ground for several years in succession, which has been the experience at Arlington Farm. This disease was very much in evidence at Arlington in 1908 and 1909, but was entirely absent in 1910.

The two leaf-spot diseases are very common and most varieties of cowpeas are subject to one or the other of them—many, indeed, being affected by both. The most serious apparent result is the early falling of the leaves, or in very susceptible varieties their almost complete destruction. The best varieties are but little affected by these diseases, but it is doubtful if any variety is completely immune.

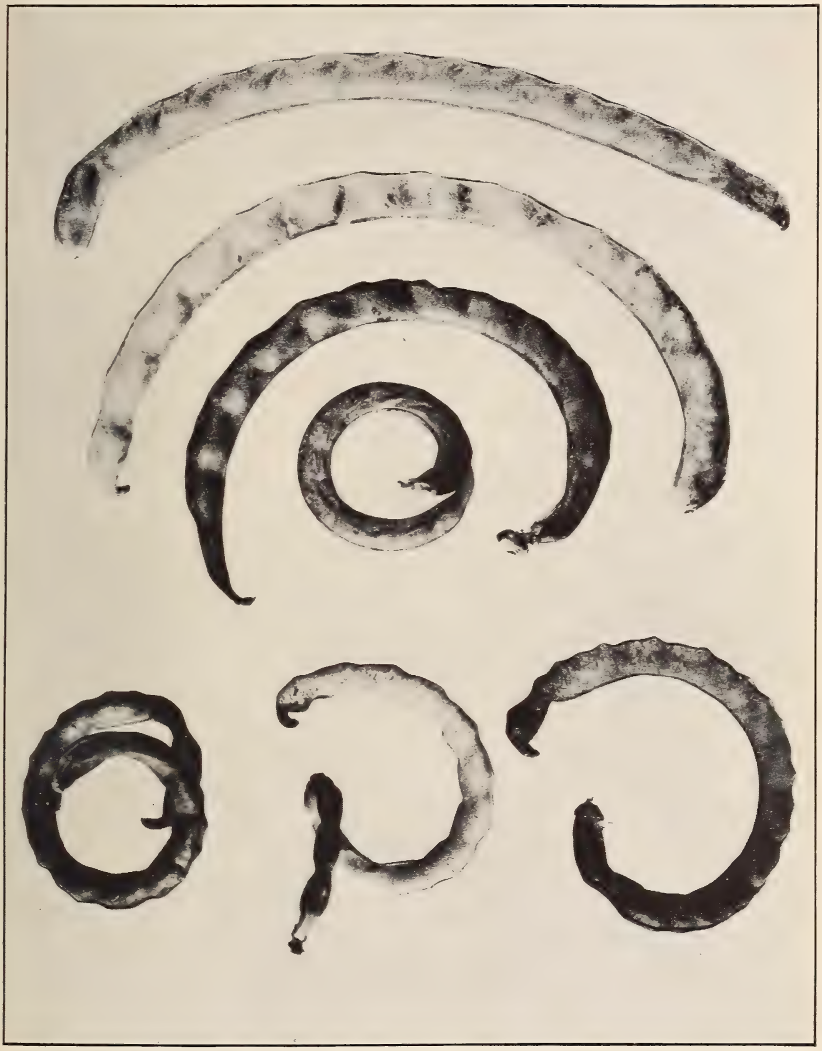
In general, cowpeas display a great range of susceptibility and resistance to the various diseases to which they are subject. Among the best varieties there is great or even complete resistance to all the more serious of these diseases, so that any serious loss from this source can probably be obviated by breeding.

THE COWPEA FLOWER AND ITS POLLINATION.

The flowers of all the cultivated vignas are practically identical. They are borne in pairs in a short spike at the end of a stout peduncle, the pairs alternately arranged. From 1 to 12 closely approximate pairs appear in each spike, but usually only one pair develops. By preventing the formation of pods each pair of flowers may be forced to bloom successively. The pedicel of each flower is very short and bears three boat-shaped, acutish bracts which are early deciduous. The calyx in most varieties is conspicuously roughened by transverse ridges. The calyx lobes vary much in length and breadth in different varieties of each of the species. Between the flowers or buds of each pair is an oblong raised cushion having usually two to eight circular extra floral nectaries commonly arranged in a single row which exude a sweet liquid that becomes white when dry. An analysis of this substance by Dr. W. W. Garner shows it to be principally glucose. A small amount of some acid, probably malic, is also present. This liquid attracts numerous insects, including ants, honeybees, and flies. Occasionally a very large cushion will have as many as 20 scattered nectaries. The structure of these nectaries is well shown in Plate IV, figure 1, from a microscopical section prepared and photographed by Dr. Albert Mann. The secreting cells are elongated and club shaped.

The flowers of the cowpea open early in the morning and nearly all are closed before noon. Later in the day but few open blossoms can be found. Each flower opens but once, wilting and collapsing after blooming. The corollas vary in color from almost pure white to lilac purple. In purple flowers the color is deepest on the wings, the keels being nearly white. In nearly white flowers the last trace of purple lingers on the upper edge of the wings. The back of the standard is paler and often yellow or yellowish green, which gives a greenish cast to the purple when viewed in front. On wilting, the standard falls into the same position it occupied in the bud. Such wilted flowers are nearly always yellow, which doubtless has given rise to the error repeated in botanical works that the flowers are "yellow" or "yellowish." In nearly all varieties a small, usually W-shaped, yellow eyespot appears at the base of the standard, to the base of which more or less conspicuous "guide lines" extend. On each side of the eyespot is a sharp vertical ridge which apparently functions to raise the standard to a vertical position.

At the base of the corolla are nectaries which secrete a small amount of honey. This honey can be reached only by long-tongued insects, such as bumblebees and butterflies. It would seem that a heavy-bodied insect, such as a large bumblebee, could certainly push down the keel enough to expose the stamens and stigma, though no instances are on record where such action has been observed. At Arlington Farm bumblebees have frequently been seen obtaining the nectar from the flowers, but in no case under observation was the stigma extruded as a result. Butterflies also can get the floral nectar



PODS OF TWO VARIETIES OF COWPEAS HAVING CURVED OR COILED PODS: UPPER FIGURE, NO. 21296A; LOWER FIGURE, NO. 29278.

(Two-thirds natural size.)

without bringing about the extrusion of the stamens and stigma. At Arlington Farm, during the season of 1909, a few of the flowers had their stamens and stigmas extruded. Whether such extrusion is due to insects or not remains to be determined. It has never been observed in the hundreds of plants grown in the Department greenhouses.

THE ORIGIN OF NEW VARIETIES.

The fact of the existence of numerous varieties of cowpeas calls for some explanation of their origin. Mention has already been made (p. 15) of the fluctuations or fluctuating variations so marked in the cowpea. It is now the general belief that such variations are not hereditable in any plants, and if such is true this type of variation can have had no effect in producing the large number of varieties which exist. A second method by which new varieties arise is that commonly spoken of by gardeners as "sports," that is, the sudden origin of a form differing markedly from all others. There can be no question as to the occurrence of what are termed "bud sports"; that is, where one branch of a plant bears flowers or leaves different from the other portion, which can be propagated and maintained by cuttings. As to the occurrence of true sports among seedlings, the evidence is not so absolute; but it is the common belief that such seed sports do occur and that they usually breed true. A third method by which new varieties are believed to originate is that of gradual variation, which differs from sporting only in that the variations are slight, though they tend to continue in the direction started. The fourth method is that of hybridization. There is no question whatever that new varieties can be originated by the crossing of two old varieties, and a very large number of cultivated varieties not only of the cowpea but of other plants are known to have originated in this way. It is evident, however, that there can be no hybrids until at least two distinct varieties exist, and it is, therefore, absolutely necessary first to admit the origin of the primitive varieties either by sporting or by gradual variation.

Thus far there is no satisfactory proof of the existence of either sports or of gradual variation in the cowpea. It is clear that such evidence can be obtained only by growing pure cultures of varieties under conditions where hybridization or accidental admixture of seeds is out of the question.

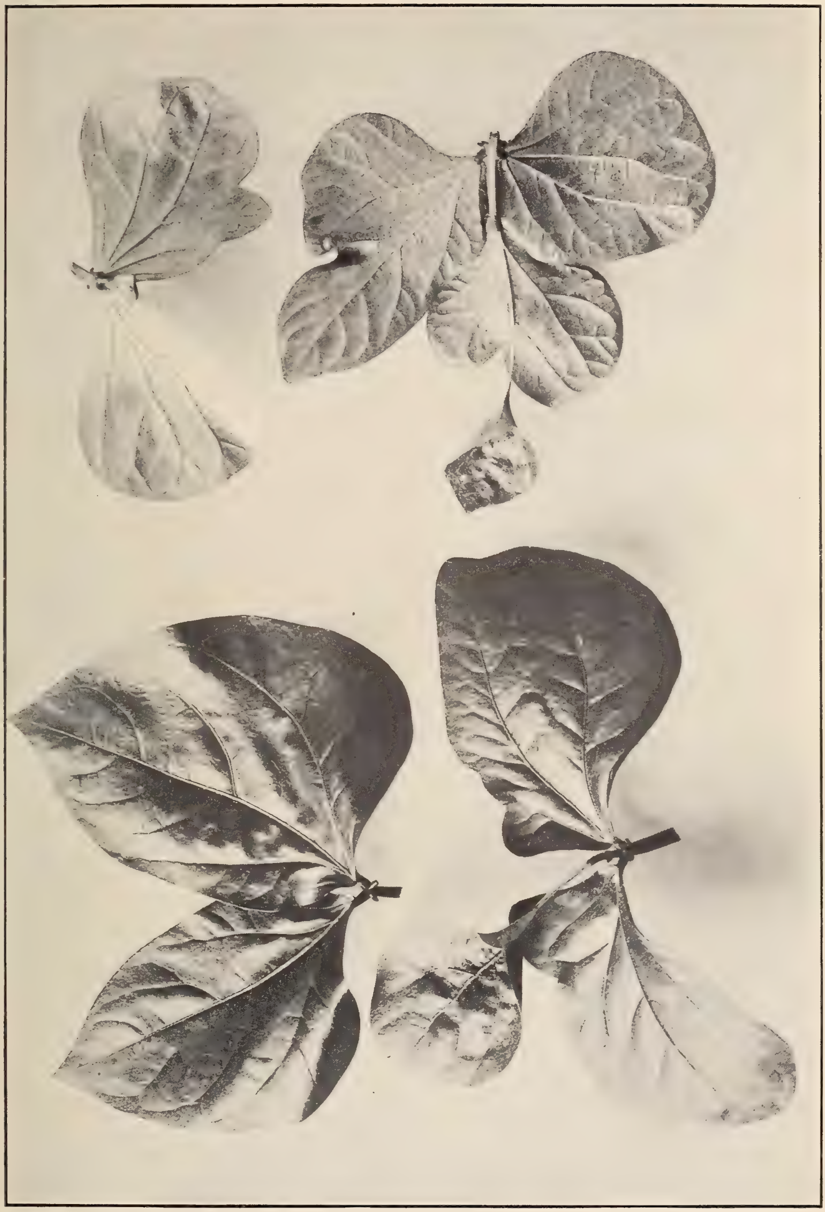
Nevertheless, it seems reasonably certain that a considerable number of the American varieties of cowpeas have originated in this country; at least, many of them have not been found in the very numerous importations made from abroad, though varieties closely similar in their seed characters have been obtained. As an example, the Whippoorwill, which is the most important American variety, has never been obtained from a foreign source. The Whippoorwill marking on foreign seeds occurs principally in Chinese varieties, though such colored seeds have also been obtained from South Africa and from India. The Chinese varieties resemble most closely the American Whippoorwill, but none of them are identical with it. One of two explanations must, therefore, be true: Either (1) that the original source of the Whippoorwill variety has not been found, or (2) that it has originated in this country by hybridizing or otherwise. A similar line of argument might be applied to other varieties. On the other hand, in the collections of seed from abroad varieties indistinguishable from some American varieties with black or black-eyed seeds have been obtained, and from places which in all probability had not obtained the seed previously from America.

It is an interesting fact that most of the cowpeas imported from China, as well as many from India and from Africa, are very much subject to bean rust (*Uromyces phaseoli*). American varieties, on the other hand, are apparently wholly immune to this disease. Mr. W. A. Orton makes the interesting suggestion that this points to this fungus being an American native, and that by natural selection the American varieties may have become immune to this disease in the same way that the Iron cowpea has become immune to wilt and to root-knot.

In regard to the seed colors of the numerous varieties of cowpeas, practically every color represented in American varieties of cowpeas has been obtained from abroad, so that so far as this point is concerned all of the American varieties may have been introductions from foreign countries; but plenty of evidence exists that many of the American varieties have originated by natural hybridizing in this country. Over the greater part of the region where the cowpea is grown, natural hybrids are of very infrequent occurrence. Nevertheless, a new kind of seed as regards coloration would easily attract one's attention and there can be little doubt that many of the American varieties have thus originated as chance hybrids. In at least two localities in the country, as hereafter explained, cowpea hybrids occur in great numbers, so that there is no difficulty in accounting for the numerous American varieties in this way alone, especially when we remember that several varieties were introduced as early as the beginning of the eighteenth century.

SIMILARITY IN HABIT OF VARIETIES FROM THE SAME SOURCE.

One of the rather startling results of testing cowpeas derived from the same foreign source is that the varieties often turned out to be extremely similar in habit and appearance notwithstanding the fact that the seeds were very different. Thus in a series obtained from



GREENHOUSE-GROWN PLANT OF CREAM COWPEA NO. 0632, SHOWING CYATHOPHYLLY AND OTHER ABNORMALITIES OF LEAVES.

(About one-half natural size.)

Celebes, No. 21813 had buff-eyed seeds; in 21814 they were marbled like Whippoorwill; in 21815, black-eyed; in 21816, buff; and in 21817, black. In all cases the plants proved to be perfectly prostrate with large, very pale leaves, and so late that they did not even bloom at Arlington; indeed, the plants were indistinguishable from each other.

In a similar series from Mount Selinda, Rhodesia, the seeds were as follows: No. 22929, buff; 22930, blue; 22931, speckled, resembling New Era; 22932, black; 22933, speckled, resembling Taylor. All these proved to be very procumbent, forming flat masses of herbage and being practically indistinguishable.

Where several kinds of seeds are mixed together, the resultant plants are generally very similar. Thus in No. 11076, from Abyssinia, three kinds of seeds—marbled, speckled, and marbled and speckled—were mixed. These all bred true in the greenhouse. In the field the plants formed very viny procumbent masses that were indistinguishable from each other, though quite different from other varieties.

A number of similar instances can be cited, so that it would appear to be generaly true that varieties from the same source are very similar in habit. A case of unusual interest is the cowpea that now occurs wild or half wild in southern Louisiana. In this variety the seeds are mostly buff, but mixed in are black, pink, maroon, and marbled. Five forms with different-colored seeds were selected out of Steckler's "Wild Louisiana" cowpea, and all bred true. They are all rather small seeded and of very similar habit, all so late that only a few pods mature at Arlington. Chinese varieties of cowpeas with few exceptions are very susceptible to rust. When coming from the same locality, the different-seeded varieties are often much alike.

In seeking an explanation of this phenomenon, three hypotheses may be suggested: (1) That the varieties were originally different in habit as well as seeds but under the influence of environment have become alike; (2) that the different-colored seeds are mere color sports from one original variety—hence very similar in habit; (3) that more or less continuous crossing has resulted in a blending of habit characters to one type, the seed colors remaining in accordance with Mendelian principles.

The strongest probability lies in the third hypothesis. Indeed, in the lot of seeds from South Africa occurred a good many seeds that looked as if they might be heterozygote, which proved to be the case in No. 22958. Heterozygote seeds are frequent also in cowpeas from China.

Again, in the Abyssinian variety, No. 11076, the marbled and speckled form, 11076B, is undoubtedly a hybrid between 11076 and 11076A, just as Groit is a cross of New Era and Whippoorwill, the type of coloration being the same in both hybrids.

It may be that we have here a partial explanation at least of the general worthlessness of Old World, especially of Asiatic and African, varieties of cowpeas as compared with the American. There the average quality of the varieties is kept to a mediocre standard by quite general cross-pollinating and the lack of any continued selection; while in the United States cross-pollination is quite unusual, so that varieties once selected remain fairly true.

NATURAL CROSSES.

Natural crosses of the cowpea occur but rarely in the field in most localities. At Arlington Farm from 30 to 100 varieties have been grown in rows side by side during the past five years and yet no noticeable contamination of the varieties has occurred. Of the crosses that occur naturally, perhaps the commonest are the varieties known as Watson's Hybrid and Holstein, both of which arise from crosses between Black and Blackeye. It is also not uncommon to find crosses between Black and Clay indicated by the seeds being more or less flecked with these two colors.

Under certain conditions crosses between varieties of cowpeas do occur freely. Two notable instances of this sort have come to our attention. The first was on the farm of Mr. J. W. Trinkle, near Madison, Ind. Mr. Trinkle has been growing cowpeas since about 1895. His original stock of seed consisted of Black, Whippoorwill, Blackeye, Lady, Cream, Warren's Extra Early, Clay from Mississippi, and a Crowder, perhaps Michigan Favorite, the last three being lost or discarded later.

In the year 1904 Mr. Trinkle says his collection contained 40 or 50 varieties, all having appeared in the few years preceding. He thinks no new varieties appeared in his plats during the first five years. In the spring of 1907, Mr. Trinkle sent the Department of Agriculture five varieties; namely, Black, Brown Coffee, and three black-and-white blotched varieties resembling Holstein. The Brown Coffee he supposed to be a hybrid between Black and Clay, but as this same variety is known elsewhere it was probably due to an admixture in his orginal seed. In January, 1908, Mr. Trinkle sent to the Department samples of all of his original varieties and 17 which he regarded as probably hybrids. Among these were Brown Coffee, Clay, and Taylor, well-known varieties that most probably came from admixtures in the original seed. All or most of the others seemed to be hybrids, a number of them with seeds very different from any previously obtained. In these hybrids five varieties, as the sequel proved, had been concerned, namely, Black, Blackeye, Taylor, Cream, and Lady, which had crossed in almost every possible way. Among them were seeds similar to Watson and Holstein known to result from crossing Black on Blackeye; large and small black Crowders; large and small purple Crowders with Taylor markings; a Taylor Crowder; large and small black Crowders with buff spots having the Taylor speckling; white with the eye colored like Taylor. The Whippoorwill and the Clay varieties apparently did not enter into any of the hybrids, but in another lot of seeds sent by Mr. Trinkle in February, 1909, is a Whippoorwill Crowder.

These seeds of the 1907 crops were picked from others after thrashing, so that each lot as finally separated may have been the product of more than one individual plant. These seeds were planted in 1908 in 1-rod rows and most of these rows produced seed like that sown. In a number of cases, however, the resultant progeny was diverse and indicated pretty clearly the parentage of the crosses. Following is a specific account of the results observed:

0423. Seeds colored like Watson. In 1908 this cross broke up into Watson and Blackeye. The Blackeye bred true in 1909, while the Watson-colored seed, mass selection, again broke up into Watson and Blackeye.

0546. A half Crowder, purplish seed with Taylor markings. In 1908 this cross produced plants with seeds like the parent, and others having nearly black seeds with a few spots colored like Taylor. In 1909 the Taylor half Crowder bred true, while the Black with the Taylor spots produced the following progeny: Four plants like the parent; two plants with brownish seeds having very faint Taylor specks; one plant with both kinds of these seeds within the same pod.

0550. Small purple Crowder seeds with Taylor markings. In 1908 this cross produced plants with seeds like the parent and other plants that were typical Lady. The Lady seeds bred true, while the purple Crowder seeds in 1909 produced four plants like the parent and two of Lady.

0551. A medium-sized purplish-black Crowder. This cross in 1908 produced Cream, as well as plants having seed like the parent. The 1908 purple-black Crowders yielded in 1909 two plants with black Crowder seeds having buff specks, and two plants like the parent.

0552. Seeds purplish-black Crowder with buff spots having Taylor specklings. In 1908 this cross produced plants with seed like the parent, and others having Crowder seeds with the Taylor markings. These were both planted in 1909, the former yielding five plants with black Crowder seeds, three plants with black Crowder seeds having buff spots, one Lady, and one small Crowder with the seeds colored like Taylor. The other produced six plants with seeds like itself, one Cream, and one black Crowder.

0554. Oblong purplish-black seeds with buff spots having Taylor markings. Among the progeny of this number for the two years are the following: Black, brown, brown with buff specks, buff with brown Taylor specklings, brownish Crowder with very faint Taylor speckling, a small purple Crowder with Taylor specklings, and a small purple Taylor Crowder with Taylor specklings.

0563. A small purplish Crowder with Taylor specklings. Both in 1908 and in 1909 this cross produced Lady besides plants like the parent. The Lady bred true.

0615. Seeds white with a black saddle. This cross produced both in 1908 and 1909 Blackeyed Lady with small subglobose seeds, besides the parent form.

0618. Seeds colored like Watson. This cross produced in 1908 Blackeye and Watson. The Blackeye bred true in 1909, while the Watson produced Black as well as Watson.

0625. A small black Crowder with buff spots having Taylor specks. After growing two seasons, the progeny of this contains Lady, Blackeyed Lady, Black, purple black, medium-sized purple Crowder with Taylor markings, Taylor-eyed Lady, that is, like Blackeyed Lady with the Taylor color about the eye and seeds like the parent form.

0626. A small black Crowder. Has yielded for two years a black Crowder, Lady, and Blackeyed Lady.

The above examples show beyond doubt the fact that these peculiar seeds were really mixed breeds containing the blood of two or more varieties. That they originated spontaneously as stated by Mr. Trinkle is scarcely to be questioned.

An interesting problem is presented in determining why cowpeas cross so freely at Madison, Ind., while apparently never or at least very rarely interbreeding at Arlington Farm and elsewhere. There is nothing in the structure of the cowpea flower to prevent natural crossing by large insects such as bumblebees. While most insects are attracted to cowpeas to obtain honey from the extra-floral nectaries outside the base of the flowers, nevertheless there is also a small quantity of honey at the base of the flower inside, which can be reached by butterflies and long-tongued bees. At Arlington Farm butterflies obtain the honey without extruding the stigmas. But few bumblebees were observed on the flowers at Arlington during 1909, though a number of flowers were found from which the column protruded. Very slight pressure, about equal to that exerted by a large bumblebee in obtaining the nectar, will cause the column to protrude and frequently remain protruding. In such case the stigma and hairy part of the style would rub against the underside of the insect, and if the insect had previously visited other cowpea flowers, it seems exceedingly probable that a natural cross would be brought about in this way.

This was also Mr. Trinkle's opinion, as he writes under date of April 1, 1907:

> I believe the bumblebee is responsible for the crossing, as I have noticed that it is strong enough and does sometimes open the corolla to get at the nectar, and this exposes the pistil.

Again he writes under date of August 7, 1909:

> I notice a great number of bumblebees in my field working over the cowpea blooms and that occasionally a flower may be seen with its reproductive organs exposed, so that the bees come in contact with them. I have not noticed any other insects on the blossoms.

The only other place that has come to our attention where such indiscriminate crossing takes place is at the Michigan Agricultural College, where the crossing of the cowpeas has been under observation for several years past by Mr. F. A. Spragg. A single instance of the record is here given. Uniform black seed from a single plant grown in 1906, sown in 1907, contained in its progeny the following colors of seeds: Black, brownish, purple black, blackeye, black and white, like Holstein, and buff. A mass selection was made of these different-colored seeds, but all plants which contained two or more kinds of seeds were discarded. Out of these colors Black and Blackeye were selected, care being taken to discard any plants in which the seed was not uniform. The Black in 1908 produced Black, Holstein with large seeds and with small seeds, Watson, Black with the chalazal end white, black-and-buff marbled, and both large and small forms having white seeds with a large black saddle. In the progeny of the Blackeye were the following colors of seeds besides blackeye, namely, brownish, buff, Watson, browneye, blotched brown and white, and purplish black, some of the last and of the brownish having the chalazal end white. In 1909 Black selected from Black produced brown with a black eye, as well as black Watson which bred true. Buff produced the following colors of seed: Buff, brownish, and browneye, in the last the eye often extending over the micropylar end. Blackeye selected from Blackeye planted in 1909 produced the following colors of seeds: Blackeye, blackeye with several to many small spots on the back, black with the back or only the chalazal end white. The Browneye with the eye extending over the micropylar end produced plants with true Browneye seeds as well as others with seeds like the parent.

These Michigan hybrids are evidently even more complex than those produced at Madison, Ind. They give rise to numerous suggestions regarding the origin of certain colors which appear in cowpea seeds which only careful experiments with reference to their Mendelian behavior will make entirely clear. Extensive investigations of this nature are being carried out by Prof. W. J. Spillman.

ARTIFICIAL HYBRID COWPEAS OF KNOWN ORIGIN.

Perhaps the first artificial hybrids of cowpeas, at least in this country, were those made by Prof. C. L. Newman at the Arkansas Agricultural Experiment Station in 1893. These hybrids, samples of all of which were presented by the originator to the United States Department of Agriculture, are especially interesting on account of the light thrown on the distribution of color in the seed coats. They show clearly that separate factors in cowpeas bring about distribution of colors and dilution of colors. In most of the Newman hybrids one parent was either a black-eyed or a white pea. Where one parent had black seeds and the other black-eyed seeds, among the hybrids were found Watson's Hybrid (Nos. 17417, 17424, 22716, 22718, 22719, 22721) and Holstein (Nos. 17410 and 22720). In the former the black is diluted and diffused through the testa, excepting about the eye, which remains black. In the Holstein the black and white are irregularly blotched. Where one parent was Taylor and the other a black-eyed pea, the hybrids included peas with the Taylor markings—fine specklings of blue on buff, wholly about the eye (No. 22727)—and others where the Taylor coloring is blotched in irregular spots and masses (Nos. 17409, 22715, and 22717). From the crosses of Whippoorwill on Lady (a pure whitish pea) the progeny had the Whippoorwill colors distributed after the manner of Holstein (Nos. 17408 and 22730). Another cross is between Warren's Extra Early (a buff kidney pea) and Sugar Crowder (a yellowish globose pea). The hybrid sent to the Department (Nos. 17422 and 22729) is a yellowish kidney pea colored very much like the Sugar Crowder.

Prof. Newman describes his method of cross-pollinating as follows:

> In 1898 single-plant selections were made from one of the Black varieties and from the Extra Early Blackeye, then growing on the Arkansas Experiment Station grounds. These varieties are of quite a different type and several crosses and reciprocal crosses were made. Enough of the corolla was torn from the female parent blossoms to permit the removal of the stamens (with curved forceps) and the emasculated blossoms inclosed in paper bags. This was done in the afternoon. On the following morning between 9 and 12 o'clock blossoms for the male parent were removed, the corolla torn away, and the pollen applied to the stigma of the blossoms prepared the previous day. The blossoms furnishing the pollen were sometimes protected by paper bags, but more frequently were not. The bags were usually removed in less than 24 hours after the transference of the pollen and a record label attached. A large proportion of the blossoms treated failed to "set" and many that matured pods developed but few peas and these were often irregular in shape. The peas secured from these crosses were planted the following spring 1 foot apart in rows 3½ feet wide. From this first crop single-plant selections were made. In some cases all the hybrid peas germinated and grew, in others none grew, and in many cases a part only germinated.
>
> The following year some of the varieties grown for crossing were planted alternatively in the same rows, two blossoms (one emasculated) brought together, tied, and inclosed in a paper sack. This method was more tedious than the first and was successful to about an equal degree.

Since 1904 Mr. W. A. Orton, of the Bureau of Plant Industry, has been engaged in breeding cowpeas better resistant to wilt and root-knot, using the well-known resistance of the Iron variety as the basis.

During the last three years Mr. G. W. Oliver, of the Bureau of Plant Industry, has made a very large number of hybrids with the general end in view of originating better varieties.

AGRICULTURAL HISTORY OF THE COWPEA AND ITS VARIETIES IN AMERICA.

The cowpea is known in the earlier American literature under the names of Indian pea, Southern pea, Southern Field pea, and Cornfield pea. It has also been called Chinese or China bean, and in

South Africa its common appellation is Kafir bean. The early history of the cowpea has been fully discussed by Wight.[1] Early in the nineteenth century it became of considerable agricultural importance throughout the Southern States, an importance which has grown greater in recent years.

During the nineteenth century a number of articles on the cowpea were written for agricultural journals and have been preserved. As early as 1822 Mr. John MacLeod, of Johnston, N. C., wrote in the American Farmer as follows:

> I have myself been in the habit of planting as many as five different kinds of peas for the last seven or eight years, and am acquainted with nearly as many more. Of these there are three that possess superior advantages as stock crops; others are esteemed more delicate for the table, and are consequently more commonly grown for market. The former are what we here call the Cow pea, the Tory, and the Black pea. The comparative values of the three kinds according to my experience are that the Cow pea, of a light-gray color, is rather the most prolific, the pods being much the largest, though not quite so thick set on the vine; they are also, I think, more inclined to vine horizontally, not attaching themselves so much to the corn as the others, consequently doing it less injury; and they are a little preferred by laborers as a diet, who give either kind a preference to any other vegetable production accompanying their meat. But they lack the durability of the other two kinds and will never remain in the field without rotting, as the others will, until late in the winter.

This is the first published record we have found of the name "cowpea," which, as used by MacLeod and by later writers, was applied to a particular variety, apparently one of the varieties now known as Clay.

In an article on the Indian pea in the Farmers' Register for 1835 (vol. 2, p. 752), "J. M. G." gives considerable information regarding the varieties of the cowpea grown at that date. Among the sorts mentioned by the writer are six Crowder varieties: Jet Black, White with a black eye, Gray, Straw-Colored or Sugar pea, Claret-Colored, and Yellowish Brown. Of other varieties, not Crowders, the following are mentioned: (1) The North Carolina pea, having white seeds with a pale-greenish eye; (2) the common black-eyed pea, of which there are two varieties, one with large seeds and one with small; (3) the Ladies pea or Gentleman pea; (4) a white pea with a brown eye, also called the Yohorn (a name which this author states is sometimes applied to two other very different varieties); (5) a red-and-white pea; (6) the Cow pea, also called the Yeatman pea, with yellowish-colored seeds; (7) the Tory pea, with jet black seeds. Most of these varieties are described in considerable detail.

The next writer found mentioning varieties of cowpeas is Mr. P. M. Edmonston, in his "Essay on the Properties and Value of the

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[1] Bulletin 102, pt. 6, Bureau of Plant Industry, U. S. Dept. of Agriculture, 1907.

Southern Pea, or 'Cornfield Pea'" (Transactions of the Virginia State Agricultural Society, 1853, vol. 1, p. 172). This writer says the varieties of Cornfield pea are very numerous, and if all the names which could be collected in the country were written their number would fill several pages, because the same pea in different sections goes by different names. Edmonston gives brief agricultural descriptions of seven varieties, as follows: The Shinney pea; the Clay or Gray pea; the Red, Tory, or Bass pea; the Blackeye pea; the Calivant; the Three Crop pea or Tribus pea; and the Black pea.

Edmund Ruffin, in 1855, published a most excellent account of the cowpea (Essays and Notes on Agriculture, "The Southern Pea," pp. 344–407). He gives good descriptions of eight varieties of cowpeas, as follows: (1) The buff-colored pea, usually called either the "cow" or "clay" pea; (2) the Bass (red) pea; (3) the blackeye pea; (4) the early black pea; (5) the mottled or Shinney pea; (6) large black or Tory (late) pea; (7) small black, late pea; (8) green-eye white pea. Ruffin was evidently acquainted with other varieties, as in another place he speaks of "sundry other white peas." He also mentions crowder peas, describing clearly the differences between the crowder form of seed and the kidney form of seed. He also says:

> Again, the same variety is known by several different names in different localities. Thus, of the names "cow-pea" and "tory-pea" each has been used for varieties of red, black, and buff color, and for several varieties of both red and black peas.

A writer in the American Agriculturist (1876, vol. 35, p. 139) states that he grew and distinguished 20 varieties. He writes as follows:

> We have classified our 20 varieties according to their color and markings and make the following groups in each, naming the largest variety first. (1) Seeds cream color, with a minute olive-green line at the eye: White Table (also Mush and Dennis's Field), Lady, Six-Oaks Field. (2) Cream colored with a brownish stain at the eye: Red-Hulled White, Sugar Crowder, White Crowder (both nearly globular), Browneye, White Field. (3) The same, but with a distinct black eye: White Crowder (different from the one above named), Blackeyed White. (4) Drab, usually darker at the eye: Claybank, Joiner's Long-Pod. (5) Yellowish brown, with a minute dark line at the eye: Yellow Crowder, Yellow Cow. (6) Purplish-brown, or reddish-chocolate color, with dark line at the eye: Red Ripper (also Tory), Breack, Red Cow. (7) Yellowish or purplish brown, mottled with very dark brown or black, especially toward the eye: Speckled Java (also Early Bush), Whippoorwill (also Speckled ditto, and Shinney). (8) Jet black, with small white scar: Black Field.

Since the establishment of the agricultural experiment stations in 1885 many of them have made collections of cowpea varieties and issued publications concerning them.

From the above it is evident that even as early as the middle of the nineteenth century numerous varieties of cowpeas were known in the United States and that already considerable confusion in regard to the names of the varieties had arisen. With the increase in the number of varieties grown the confusion has become much greater as there are now several or many varieties for every seed color. Some endeavor has been made to ascertain the actual identity of varieties which have been described or mentioned in publications, but in many cases it is no longer possible to do this, and in other cases the identification can be only approximate.

METHODS OF TESTING DIFFERENT VARIETIES.

The comparative data concerning the numerous varieties here given are based largely on the testing conducted at Arlington Farm since 1903. During the first two years the work was conducted by Mr. C. R. Ball; during 1905 to 1910, inclusive, by the writer, with the assistance of Mr. H. T. Nielsen, in 1905 to 1908, and of Mr. W. J. Morse in 1909 and 1910. Most of the testing has been in cultivated rows 3 feet apart (except in 1909 and 1910 when they were 3½ feet), the rows being usually 8 rods long, but in many cases shorter owing to the small supply of seed. As new varieties have been introduced each year the period of testing varies from eight years down to one year. In many cases the variety did not mature seed at Arlington, but of most of these enough seed was grown in the greenhouse to plant a second year. The collection of 1909 was almost complete, and except where otherwise indicated the comparative descriptions are based mainly on the behavior during that season, which was an exceptionally dry one, so that the plants were rather smaller than usual. The characteristics of the varieties during the different seasons held remarkably true, so that many of their distinctive peculiarities of habit could easily be recognized. The principal obscuring fluctuation due to better soil or more favorable season was the tendency of the upright-growing varieties to lodge. Apparently, there are no phenomena exhibited in cowpeas that could be called new-place effects unless changes in seed color (as exemplified under No. 16167) are such, which is at least doubtful. In all cases where such seed color forms or varieties were selected out they bred true. No cases of natural hybridization in cowpeas have been observed at Arlington, notwithstanding the fact that numerous varieties have been grown in close proximity for several years. In a few cases where diversity occurred from the same lot of seed it seems clearly explainable by previous hybridization.

While this method of testing does not give comparable yields, it does furnish an excellent method for comparing the varieties as to habit, disease resistance, vigor, fruitfulness, life period, etc., and it is believed that the conclusions reached as to the most desirable varieties are as accurate as could be determined by any other feasible method.

A large proportion of the varieties can at once be eliminated on account of poor habit, extreme lateness, or susceptibility to disease. In such varieties the yield signifies but little. Of the really desirable varieties the yield of hay or of seed or of both, considered with reference to habit and ease of harvesting, is, of course, determinative. Many of the more desirable varieties have thus been tested at Arlington Farm and at Chillicothe, Tex. Various experiment stations have conducted similar work. Further comparative plat trials of the six or eight most desirable varieties need to be conducted, however, as there is still considerable difference in opinion as well as divergence in results regarding the relative values of the best varieties. Such plat trials should be separate both for hay yield and for seed yield, and ease or cost of harvesting should be given due consideration.

THE BEST VARIETIES OF COWPEAS.

After five years of extensive testing of cowpea varieties at Arlington Farm, and to a less extent at Chillicothe, Tex., Monetta, S. C., and Biloxi, Miss., the conclusion reached is that, everything considered, the most valuable American varieties of cowpeas from a forage standpoint are Whippoorwill, Iron, and New Era, and their hybrids, Brabham and Groit. Important, but of distinctly secondary value, are such varieties as Unknown, Clay, Red Ripper, Black, and a considerable number of others not grown extensively. Among the little known varieties that are deserving of most careful testing are Peerless, Red Yellowhull, and Red Whippoorwill. In regard to table varieties, no opinion is vouchsafed. The general prejudice for such purpose is in favor of white-seeded or nearly white-seeded varieties.

In order to ascertain the opinion of the various experiment-station agronomists, based upon their experimental work and their knowledge of their respective States, a letter was addressed to each, asking the following questions: “What five varieties of cowpeas do you regard as the best for your State?” and “What five varieties of cowpeas are most commonly grown by the farmers of your State?” The answers, briefly digested, are as follows:

For Virginia, Mr. T. B. Hutcheson thinks the most commonly grown varieties are Blackeye, Whippoorwill, New Era, Black, and Clay. The Blackeye grown as a table pea has perhaps the greatest acreage. The best varieties he thinks are Whippoorwill, Iron, New Era, Black, Unknown, and Clay. For the same State, Commissioner G. W. Koiner would place the list of the five leading varieties as follows: Blackeye, Whippoorwill, New Era, Unknown, and Clay.

For North Carolina, Prof. B. W. Kilgore regards the five best varieties to be New Era, Iron, Red Ripper, Whippoorwill, and Clay; and the varieties most generally grown to be Whippoorwill, Taylor, Black, Clay, New Era, Red Ripper, Unknown, Iron, and Large Blackeye.

For Tennessee, Prof. C. A. Mooers regards both as the best and most extensively grown the following: Whippoorwill, Clay, Black, and New Era; the Red Ripper is grown to a slight extent.

For South Carolina, Prof. J. N. Harper considers the best varieties to be Iron, Unknown, Red Ripper, New Era, Clay, Whippoorwill, Red Crowder, and Extra Early Blackeye. From all the information at hand, the varieties most commonly grown are placed in the following order: Unknown, New Era, Clay, Whippoorwill, Iron, Red Ripper, Red Crowder, and Extra Early Blackeye. For the same State, Prof. C. L. Newman considers the best varieties to be Whippoorwill, Clay, Black, New Era, and Unknown; though in several localities the Southdown, or Calico, rivals the Whippoorwill in value. In the order of their acreage, he places them as follows: Clay, Whippoorwill, Unknown, New Era, and Black.

For the State of Georgia, Director M. V. Calvin selects the following as the best varieties: Calico, Clay, Unknown, Red Crowder, Red Ripper, and Whippoorwill.

For Florida, Prof. J. M. Scott states: "The varieties most commonly grown in the State are Whippoorwill, Clay, New Era, and several Crowder varieties, such as Sugar Crowder and Speckled Crowder."

For Alabama, Prof. J. F. Duggar, basing his opinion on extensive experimenting, would select as the five best varieties the Iron, Whippoorwill, Unknown, New Era, and Browneye Crowder, the latter especially as a table pea. From the information at hand, Prof. Duggar thinks that Whippoorwill is most commonly grown, with Unknown second.

For the State of Mississippi, Prof. S. M. Tracy thinks the most valuable are the following: Whippoorwill, Clay, Unknown, New Era, and Blackeye (the last for table use). Probably greater areas of Whippoorwill and Clay are grown than of all of the others combined.

For the States of Alabama and Mississippi combined, Mr. M. A. Crosby, who has traveled extensively in these States, thinks that fully 90 per cent of the cowpeas grown are Whippoorwill or Whippoorwill mixed, but Iron and New Era are both growing in popularity.

For Louisiana, Prof. W. R. Dodson states that Clay and Whippoorwill are grown almost to the exclusion of other varieties, though Unknown is grown to a considerable extent. In the northern part of the State, Lady and Large Blackeye are grown extensively for table peas. The New Era variety is increasing in popularity. He regards the Coffee and Calico varieties as excellent; likewise the Conch, which is comparatively unknown in the State.

For the State of Texas, Mr. A. B. Conner regards the best varieties, at least for northern Texas, to be Brabham, New Era, Iron, Whippoorwill, and Clay. The Whippoorwill is more largely grown than any other variety, followed by the Blackeye and a crowder, which is probably Michigan Favorite. The Clay and Iron varieties are grown to a slight extent.

Mr. B. Youngblood, who is intimately acquainted with Texas agriculture, thinks that 90 per cent of all the cowpeas grown in that State are Whippoorwill. Among others grown are Clay (especially for hay), Unknown, Black (on bottom lands), and various white-seeded varieties for table use.

For the State of Arkansas, Prof. C. L. Newman selects as the best varieties: Whippoorwill, Warren's Extra Early, New Era, Black, and Clay. In some sections the Southdown and Calico rival the Whippoorwill. In the northwestern part of the State, Warren's Hybrid gave maximum yields of seed. The varieties most commonly grown in Arkansas are Whippoorwill, Clay, and Black.

Mr. A. D. McNair writes that, for Arkansas—

> Whippoorwill is by all means the most popular variety, and I presume there are 10 times as many bushels of that variety sold as all others put together; Clay is second in importance. Other varieties grown are the Black, the Unknown, and the Blackeye, the latter for table purposes. A few farmers grow New Era, Gray Goose, and Black Crowder.

For the State of Oklahoma, Mr. W. L. Burlison, writes:

> So far the Whippoorwill has no peer in this State. The New Era, California Blackeye, Clay, and Iron are four of the varieties which are most promising out of the long list which has been grown here for three years. The Whippoorwill is the leading one in this State; California Blackeye may be considered a close second.

For the State of Kansas, Prof. A. M. Ten Eyck writes that he would recommend in the order named: New Era,[1] Gray Goose, Whippoorwill, Blackeye, and Warren's New Hybrid. For the northern half of the State, Groit is easily first. For the southeastern and south-central parts of the State the Whippoorwill may be preferred for forage, but no variety exceeds the Groit for seed production. The varieties most extensively grown in the State are New Era and Whippoorwill. Other varieties are planted, such as Clay, Iron, Blackeye, Crowder, and Unknown, but none of these produce seed well in Kansas.

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[1] The New Era grown at the Kansas experiment station for the past several years proves to be Groit.

For Missouri, Prof. A. E. Grantham writes that Whippoorwill is most generally used, followed by Clay, New Era, and Black. The New Era is increasing in popularity, especially to sow after wheat, but he thinks that Groit is superior to New Era, and perhaps the best of all varieties with which he is familiar under Missouri conditions.

For the State of Illinois, Mr. O. D. Center writes:

> The varieties that are most commonly grown and give the best satisfaction in the southern section of the State, in the order of their importance, are Whippoorwill and New Era.[1] For the central part of the State the varieties in the order of their importance are Michigan Favorite, Blackeye, New Era, Black, and Whippoorwill. For the northern part of the State only Michigan Favorite and Blackeye are of any value.

For the State of Kentucky, Prof. H. Garman says:

> The Whippoorwill has been longest and most generally sown, although it is not as highly valued as the New Era. We think very favorably of the Iron and the Taylor.

For Indiana, Prof. A. T. Wiancko would place the varieties for forage production in the order of their merit as follows: Iron, Clay, Red Ripper, New Era, and Michigan Favorite. For grain production, in like order, he names Early Blackeye, Whippoorwill, New Era, Michigan Favorite, and Warren's. Whippoorwill, Early Blackeye, and New Era are most commonly grown, while Michigan Favorite and Warren's in northern Indiana and Iron, Clay, and Red Ripper in southern Indiana are more or less used.

For Maryland, Mr. Nickolas Schmitz says the varieties most commonly grown are Whippoorwill, New Era, Black, and Unknown. In the order of their value he regards the following as best for eastern and southern Maryland: Whippoorwill, New Era, Groit, Brabham, and Unknown. The last named he regards as the best for planting in corn for ensilage. For northern and western Maryland he would put them as follows: New Era, Groit, Whippoorwill, and Unknown. Only the New Era and Groit can be depended on for seed production.

For Delaware, Prof. A. E. Grantham thinks Whippoorwill, New Era, and Blackeye are most commonly grown. He considers the best varieties to be Whippoorwill, Groit, and possibly Clay.

The foregoing data are summarized in Table I.

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[1] Most of the so-called New Era grown in southern Illinois is Groit.—C. V. P.

TABLE I.—*Summary of reports upon cowpeas, by States.*

BEST VARIETIES, IN ORDER OF MERIT.

State and authority.	1	2	3	4	5
Alabama; Duggar	Iron	Whippoorwill	Unknown	New Era	Browneye Crowder.
Arkansas; Newman	Whippoorwill	Warren's Extra Early.	New Era	Black	Clay.
Delaware; Grantham	do	Groit	Clay		
Georgia; Calvin	Calico	Clay	Unknown	Red Crowder.	Red Ripper.
Indiana; Wiancko:					
For grain	Early Blackeye.	Whippoorwill	New Era	Michigan Favorite.	Warren's.
For hay	Iron	Clay	Red Ripper	New Era	Michigan Favorite.
Kansas; Ten Eyck	Groit	Taylor	Whippoorwill	Blackeye	Warren's New Hybrid.
Kentucky; Garman	New Era	Whippoorwill	Iron	Taylor	
Maryland; Schmitz:					
Eastern and southern	Whippoorwill	New Era	Groit	Brabham	Unknown.
Northern and western	New Era	Groit	Whippoorwill	Unknown	
Mississippi; Tracy	Whippoorwill	Clay	Unknown	New Era	Blackeye.
North Carolina; Kilgore	New Era	Iron	Red Ripper	Whippoorwill	Clay.
Oklahoma; Burlison	Whippoorwill	New Era	California Blackeye.	Clay	Iron.
South Carolina:					
Harper	Iron	Unknown	Red Ripper	New Era	Clay.
Newman	Whippoorwill	Clay	Black	do	Unknown.
Tennessee; Mooers	do	do	do	do	Red Ripper.
Texas; Conner	Brabham	New Era	Iron	Whippoorwill	Clay.
Virginia; Hutcheson	Whippoorwill	Iron	New Era	Black	Unknown.

VARIETIES MOST CULTIVATED, IN ORDER OF ACREAGE GROWN.

Alabama; Duggar	Whippoorwill	Unknown			
Arkansas:					
McNair	do	Clay	Black	Unknown	Blackeye.
Newman	do	do	do		
Delaware; Grantham	do	New Era	Blackeye		
Florida; Scott	do	Clay	New Era		
Illinois; Center:					
Central	Michigan Favorite.	Blackeye	do	Black	Whippoorwill.
Northern	do	do			
Southern	Whippoorwill	New Era			
Indiana; Wiancko	do	Early Blackeye.	New Era		
Kansas; Ten Eyck	New Era	Whippoorwill			
Louisiana; Dodson	Whippoorwill	Clay	Unknown	Lady	Blackeye.
Maryland; Schmitz	do	New Era	Black	Unknown	
Mississippi and Alabama; Crosby.	do	Iron	New Era		
Mississippi; Tracy	do	Clay			
Missouri; Grantham	do	do	New Era	Black	
North Carolina; Kilgore	do	Taylor	Black	Clay	New Era.
Oklahoma; Burlison	do	California Blackeye.			
South Carolina:					
Harper	Unknown	New Era	Clay	Whippoorwill	Iron.
Newman	Clay	Whippoorwill	Unknown	New Era	Black.
Tennessee; Mooers	Whippoorwill	Clay	Black	do	
Texas:					
Conner	do	Blackeye	Michigan Favorite.	Clay	Iron.
Youngblood	do	Clay	Unknown	Black	
Virginia:					
Hutcheson	Blackeye	Whippoorwill	New Era	do	Clay.
Koiner	do	do	do	Unknown	Do.

COMMERCIAL VARIETIES OF COWPEAS.

In order to ascertain the status of the commercial sale of cowpea seed, a letter was addressed in 1910 to a number of the principal seedsmen handling cowpea seed, asking them to send a list of varieties in the order of the demand for them. The results are as follows:

The Griffith & Turner Co., of Baltimore, Md., write that they handle cowpeas in about the following order as to quantity: Black, Whippoorwill, New Era, Wonderful, mixed.

J. Bolgiano & Son, of Baltimore, Md., write:

> We usually sell from two to three times as many of mixed peas as we do of the separate varieties. Next in popularity to the mixed is New Era; third, Black. Other varieties, such as Clay, Wonderful, Red Ripper, and Gray Crowder, are little called for.

T. W. Wood & Sons, of Richmond, Va., give the relative commercial importance of the varieties as follows: Whippoorwill, Black, and New Era. Other varieties class about as follows: Blackeye for table purposes, Clay, Unknown, Iron, Red Ripper, and Taylor or Gray Goose.

Wood, Stubbs & Co., of Louisville, Ky., state that their demand is in the following sequence: Whippoorwill, Black, New Era, Clay, and Gray Goose. They sell very few of any of these with the exception of Whippoorwill and Black.

The Plant Seed Co., of St. Louis, Mo., state that their demand is almost exclusively for Whippoorwill, a few inquiries being received for Clay, Black, and Unknown. A small demand exists for Red and certain sections call for New Era.

The Barteldes Seed Co., of Lawrence, Kans., state that the best selling varieties are Whippoorwill and New Era. Only limited quantities are sold of Black, Clay, and Blackeye.

The Texas Seed & Floral Co., of Dallas, Tex., write that their demand is principally for Whippoorwill, 80 per cent of their sales being of this variety. The 20 per cent is made up of Clay, Large Blackeye, Unknown, and Cream.

The Amzi Godden Seed Co., of Birmingham, Ala., state that of the bunch sorts their demand in the order of importance is for Whippoorwill, Early Blackeye, and New Era; and of the running sorts, Unknown, Clay, Black, Red Ripper, Late White Blackeye, White Grayeye, and Small White Lady. They further write:

> So far as our own section is concerned, these varieties could be safely limited to the Unknown, which is unquestionably the best of all the running sorts, and for eating purposes to the late White Blackeye, the White Grayeye, and the small White Lady. In bunchy sorts there is really no excuse for more varieties than the Whippoorwill, and in white sorts the large Early White Blackeye.

The J. Steckler Seed Co. (Ltd.), of New Orleans, La., give the following list: Tennessee Clay, Carolina, mixed, Unknown, Red Ripper, Whippoorwill, Blackeye, Lady, and Louisiana Wild.

The N. L. Willet Seed Co., of Augusta, Ga., write as follows:

> Three-fourths of our shipments to-day are branded Mixed Clays [a group name including Iron, Unknown, Clay, and others]; one-fourth of our demand for mixed peas goes to higher latitudes as mixed Whippoorwill. These are the great standard shipments. * * * We get few Clays; we grow large amounts of Unknown, and we can say that straight Unknown constitutes 50 per cent of the demand and Iron and Whippoorwill 25 per cent each.

H. G. Hastings & Co., of Atlanta, Ga., respond:

> In our trade, the demand seems to be pretty evenly divided between Unknown, Clay, and mixed. Within the last two or three years there has been quite a demand for the Iron and New Era varieties, but the older sorts are still the best sellers.

The Crenshaw Brothers Seed Co., of Tampa, Fla., give the following list in the order of popularity: Whippoorwill, Clay, Red Ripper, Black Crowder, Two Crop, Conch, and California Blackeye.

NAMES THAT HAVE BEEN APPLIED TO VARIETIES OF COWPEAS AND RELATED SPECIES.

The list of names which have been applied to different varieties of cowpeas is a very large one. The old names, such as Clay, Black, Red Ripper, Unknown, and Blackeye, have been preserved through tradition by seedsmen. At present from 5 to 20 varieties can be purchased in the United States under each of these names. They therefore may be regarded as group names rather than varietal names. Most of the names more recently used for varieties of cowpeas have been applied without a due realization of the large number of varieties. In many cases descriptions have been given of the varieties, but even these do not, as a rule, suffice to identify them. Furthermore, different experiment stations have, in some instances at least, experimented with very different varieties under the same name. In a compilation, therefore, of the agronomic data concerning varieties of cowpeas, the element of doubt constantly arises as to the identity of the variety experimented with. In a number of cases seed has been obtained from experiment stations so apparently authentic that the identity of the variety is practically certain. In many other cases, however, authentic seed is no longer available, so that a certain degree of doubt must remain regarding the variety under test.

In view of the great confusion which has already arisen, it is hoped that future experimenters with cowpeas will endeavor to work as far as possible with pedigreed seeds. Following is a list of names and notes concerning pedigreed seed, largely the work of Mrs. Katherine S. Bort. The serial number references relate to the chronological list beginning on page 75.

Afghania.—A vernacular name for a catjang, Agrostology No. 1628, obtained from the United Provinces of Agra and Oudh, India.

Algerian.—Mentioned, without description, in Bulletin 6, New Mexico Agricultural Experiment Station, 1892.

Ankok.—See 5222.

Argen Everbearing.—A variety grown by Mr. Kline O. Varn, Fort Meade, Fla., said to have been introduced from Argentina and to be exceptionally valuable (Southern Planter, Mar. 19, 1904). Efforts to obtain seed of this variety have been without success.

Arkansas.—Mentioned, without description, in Bulletin 81, Delaware College Agricultural Experiment Station, 1908.

Asby.—Said to be a prolific bunch variety with buff-colored seeds, and pods standing erect above the foliage and so early that two crops can be grown in Louisiana in the same season. (Farm and Ranch, Natchitoches, La., Feb. 16, 1907.) Efforts to obtain seed of this variety have been unavailing. The description points strongly to its being a catjang.

Asparagus bean.—The common name applied to *Vigna sesquipedalis.*

Ayrshire.—See 17409.

Backwoods.—Agronomic notes, but no description, are given on the variety under this name in Bulletin 62, series 2, Louisiana Experiment Station, 1900, page 466. Perhaps the same as Pea of the Backwoods.

Barbati.—One of the common vernacular names applied to catjangs or cowpeas in India; also spelled Burbuti, Burbudi, and Burbadi.

Bass.—A name employed by some of the early writers for a variety with red seeds. It is described by Edmund Ruffin (Essays and Notes on Agriculture, 1855, p. 352) as follows:

> The Bass (red) pea is used extensively on the lower Roanoke, in North Carolina, and preferred to the buff pea, because of its being much less liable to rot after ripening, and many of the seeds will remain on and in the ground (trodden down by grazing stock), during all the winter in North Carolina, and will germinate in the following spring. This quality (of other kinds as well as of this pea) is valuable for a mere forage crop; but is of less account, if not objectionable, for a manuring crop for wheat, when the peas are plowed under in September or October. The Bass pea is also one of the best vine bearers—but too late in maturing for this region.

Also mentioned in Transactions of the Virginia State Agricultural Society, 1853 (vol. 1, p. 173), as the Red, Tory, or Bass pea. Apparently, this variety is closely similar to Red Ripper, 17350.

Bhadela.—A vernacular name used in India. See 17378.

Big Mush.—Brief agronomic and descriptive notes published in Bulletin 46, Delaware College Agricultural Experiment Station, 1900 (p. 20), refer to this variety as follows:

"Late; good growth of vine; loses leaves early."

Black.—A name generally applied to any black-seeded noncrowder variety. See 29292.

Black and White.—Described in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 582), as follows:

> A black-and-white speckled variety; vine a vigorous grower, running low and near the ground; pods medium length, imperfectly filled with small peas; yield per acre, 8.6 bushels.

In Bulletin 40, Mississippi Agricultural Experiment Station, 1896, the following descriptive note is given: "Small seed; habit, trailing; early." It is also mentioned, without description, in Bulletin 62, series 2, Louisiana Experiment Station, 1900 (p. 466). This is probably much the same as Holstein, 17327.

Black-and-White Speckled.—Described in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 582), as follows:

> *Black-and-White Speckled.*—Vine a vigorous grower, running low and near the ground; pods medium length, imperfectly filled with small peas; yield per acre, 8.6 bushels; sown May 11.

Black Betty.—Name mentioned in Lunan's Hortus Jamaicensis, 1814 (p. 434); presumably refers to a black-seeded variety of cowpea.

Black Bunch.—Name with agronomic notes, published in Bulletin 77, Arkansas Agricultural Experiment Station (p. 31). See 0589 under 29292.

Black Crowder.—See 22052. Argonomic notes under this name are given in Bulletin of the North Carolina Department of Agriculture, volume 31, No. 6, 1910.

Black Early.—Agronomic notes on a variety under this name are given in Bulletin 73, Missouri Agricultural Experiment Station, 1906; and in Bulletin 81, Delaware College Agricultural Experiment Station, 1908. Probably same as Early Black.

Blackeye.—The earliest occurrence of this name in this form seems to be in the Farmers' Register, 1835 (vol. 2, p. 752), as follows:

> Common and in general demand among our sailors. Of this kind there are two varieties, one much larger but less productive than the other. The smaller black-eyed pea is very productive; but as an improver of land, it stands at the bottom of the scale, having less vine than any other kind.

Similar notes occur in Transactions of the Virginia State Agricultural Society, 1853 (vol. 1, p. 175); and Ruffin, Essays and Notes on Agriculture, 1855, page 348. In experiment-station literature, descriptions or agronomic notes occur as follows:

Nebraska Agricultural Experiment Station, Bulletin 12, 1890.
Georgia Experiment Station, Bulletin 26, 1894.
Texas Agricultural Experiment Station, Bulletins 34 (1895) and 59 (1901).
Louisiana Experiment Station, Bulletins (ser. 2) 40 (1896) and 72 (1902).
Mississippi Agricultural Experiment Station, Bulletin 40, 1896.
North Carolina Agricultural Experiment Station, Bulletin 133, 1896.
Oklahoma Agricultural Experiment Station, Bulletin 44, 1900.
Tennessee Agricultural Experiment Station Bulletin (vol. 11, no. 3), 1898.
Kansas State Board of Agriculture, Report for 1900 (p. 504).
Delaware College Agricultural Experiment Station, Bulletins 46 (1900) and 81 (1908).
Michigan Agricultural Experiment Station, Bulletin 199 (1902) and Special Bulletin 31 (1905).
Arkansas Agricultural Experiment Station, Bulletin 80, 1903.
Missouri Agricultural Experiment Station, Bulletin 73, 1906.
South Carolina Agricultural Experiment Station, Bulletin 123, 1906.
Kansas Agricultural Experiment Station, Bulletin 160, 1909.

So many varieties of cowpeas have black eyes that the name is really a group name.

Blackeyed Bird's-Foot.—See 2082.

Blackeyed Lady.—See 17420.

Blackeyed White.—Mentioned in the American Agriculturist, 1876 (vol. 35, p. 139). Described as "cream colored with a distinct black eye." Probably the same as "Blackeye."

Black Field.—Mentioned in the American Agriculturist, 1876 (vol. 35, p. 139). Described as "Jet black with a small white scar."

Black King.—Mentioned in Bulletin 28, series 2, Louisiana Experiment Station, 1894 (p. 974).

Black Self-Seeding.—See 0588 under 29292.

Blue.—Mentioned in various publications of the Louisiana Experiment Station. Descriptive notes are given as follows:

> A small, blue, bunch pea. An excellent bearer and early, maturing peas in from 50 to 60 days after planting. (Bulletin 27, Louisiana Experiment Station, 1889, p. 488.)
>
> Blue pea, a bunch pea and small, blue colored, bears well but makes very little vine; very early. (Bulletin 40, series 2, Louisiana Experiment Station, 1896, p. 1459).

The identity of this variety, which has been mentioned under this name only in bulletins of the Louisiana Experiment Station, is uncertain, but it is probably the New Era. The New Era is locally known as the "Blue pea," as the Groit is locally known in southern Illinois.

Blue-Black.—Agronomic and descriptive notes of this variety are given in Bulletin 46, Delaware College Agricultural Experiment Station, 1900. It is said to be "Late; bluish-black seed; vines inclined to stand up; yield of vine, fair." Perhaps the same as Watson, 17425.

Blue Hull.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 180), as follows:

> Semirecumbent; stalk and leaf small; tint, a moderate green; trails slightly at end of vines; blossom—vexillum light purple, wings white; form, kidney; pod—medium in size, blue-black; pea, large, white, wrinkled; very late; moderate producer of both vines and peas.

The same name with descriptive notes occurs in Bulletin 40, Mississippi Agricultural Experiment Station, 1896: "Seeds white, large; habit, half trailing, early." Bulletin 46, Delaware College Agricultural Experiment Station, 1900 (p. 21), has the following note: "Very late; trails; moderate yield of vine."

Boss.—This name has been mentioned in several bulletins of the Louisiana Experiment Station, together with descriptive and agronomic notes. It is there stated to be identical with Unknown.

Brabham.—See 21599.

Breack.—This name is published in the American Agriculturist, 1876 (vol. 35, p. 139), with the following description: "Purplish-brown or reddish-chocolate colored, with a dark line at the eye."

Brown and White.—This name, without description, appears in Bulletin 62, series 2, Louisiana Experiment Station, 1900, page 466.

Browneye.—The earliest publication of this name seems to be in the American Agriculturist, 1876, quoted on page 36. Descriptive or agronomic notes in experiment-station literature occur as follows:

> Arkansas Agricultural Experiment Station, Annual Report for 1890 (p. 131) and Bulletin 80, 1903.
>
> Texas Agricultural Experiment Station, Bulletin 34, 1895.
>
> Mississippi Agricultural Experiment Station, Bulletin 40, 1896.
>
> Delaware College Agricultural Experiment Station, Bulletins 46 (1900) and 81 (1908).

Brown-and-White Speckled Crowder.—Described in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 582), as follows:

> Brown-and-White Speckled Crowder.—A speckled crowder variety; vines erect, running vigorously; first ripe September 18; pods long, well filled with brown-and-white speckled peas of medium size; yield per acre, 14 bushels; sown May 11.

Brown Coffee.—See 17404. Agronomic notes occur in Bulletin of the North Carolina Department of Agriculture (vol. 31, no. 6), 1910, but this variety is somewhat different from 17404. See 25512B.

Brown Crowder.—See 17370. Agronomic notes occur in Bulletin 80, Arkansas Agricultural Experiment Station, 1903; and in Bulletin 81, Delaware College Agricultural Experiment Station, 1908.

Browneye Crowder.—See 17348. Agronomic notes occur in Bulletin 118, Alabama Agricultural Experiment Station, 1902; and in Bulletin of the North Carolina Department of Agriculture (vol. 31, no. 6), 1910.

Browneyed Sugar.—Appears by name only in the 1896 catalogue of the N. L. Willet Seed Co., Augusta, Ga.

Buckmoran.—Mentioned with agronomic, but without descriptive notes in Bulletin 62, series 2, Louisiana Experiment Station, 1900 (p. 466).

Buckshot.—Mentioned by name only in the 1908 catalogue of the N. L. Willet Seed Co., Augusta, Ga.

Buff.—The following descriptive notes are found in Ruffin's Essays and Notes on Agriculture, 1855 (p. 351).

> The buff-colored pea, usually called either the cow or clay pea, has seeds of a uniform pale-buff color, except the eye, which is in a small spot of pale green. The buff tint is more or less deep in different crops, but is very uniform through any one, raised from seed of one appearance. This kind is understood to be productive in grain, and I know it to be so in general growth (or of vine and leaf). It is too late in ripening for my locality,[1] so that in the series of years when I cultivated this kind principally, and preferred it as the best vine bearer, I could not save seed except insufficiently, and at more than usual cost of labor. It will not bear much exposure to wet weather after ripening without rotting. * * * Mr. J. Cotton, of Halifax, N. C., an experienced and judicious pea farmer, says that two very different buff-colored peas are usually confounded as one. The tender pea (1) described above he calls the cowpea, and as the claypea he raises a kind much more productive in grain, and of which the ripe peas will lie on the ground all winter without rotting. This last is a late kind—and he has made it earlier, and without any loss in its production, as he thinks, by every year saving the earliest ripened pods only for planting.

Burbudi.—See Barbati.

Bush Conch.—This name appears in catalogue for 1910 of Crenshaw Bros. Seed Co., Tampa, Fla., apparently a synonym for Conch.

Calavance or Calavence.—A name used by early writers for the cowpea. Barham (Hortus Americanus, 1794, p. 28) used it for a variety with small, white seeds, while Lunan (Hortus Jamaicensis, 1814, p. 434) used it for a red-seeded variety. Among later spellings of this name have been Calivant, Galivant, and Gallivant, apparently applied to different varieties.

Calico.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 180), as follows:

> Recumbent; tremendous trailer; small leaf and stalk but dark green and vigorous; extremely late; no blossoms August 18; form, kidney; pod, very large, yellow; pea, very large, red mottled on white ground and quite pretty; very heavy producer of both peas and vines.

Descriptive and agronomic notes also occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; Bulletin 21, New Mexico Agricultural Experimental Station, 1897; and in Bulletin 46, Delaware College Agricultural Experiment Station, 1900. A variety is described in Bulletin 98, Kentucky Agricultural Experiment Station, 1902 (p. 44), under the same name, but which may be different. The description is as follows:

> Trails moderately; foliage gray green; planted May 3; numerous green pods August 10; some ripe pods August 31; pods 6 to 7 inches long, with a

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[1] In Virginia, probably near Marlboro.

> compound curve; plump; 0.37 inch from front to back; 15 seeds in a pod; length of seed, 0.32 inch; diameter from scar to back, 0.25 inch; thickness, 0.20 inch; color, cream white, with an extensive area about scar drab, and frequently with scattered dots of this color. Product of vine, medium; of seed, 10⅔ to 13⅓ bushels per acre. Seems well adapted to this region. Seed bought of C. S. Brent, Lexington, Ky.

Perhaps both of the above descriptions refer to the same variety, which may be identical with 17339. This has buff-and-white blotched seeds, but the buff quickly deepens in color to red.

California.—A variety is mentioned under this name in Bulletin of the Tennessee Agricultural Experiment Station (vol. 11, no. 3, 1898, p. 96); and in Bulletin 160, Kansas Agricultural Experiment Station, 1909. Apparently this is California Blackeye, practically the only variety at present grown in California.

California Bird's-Eye.—A name mentioned in Bulletin 61, Cornell University Agricultural Experiment Station, 1893 (p. 335). In all probability identical with California Blackeye.

California Blackeye.—See 17338. Agronomic notes on this variety are found in the following publications:

> Arkansas Agricultural Experiment Station, Bulletins 70 (1901) and 80 (1903).
> Missouri Agricultural Experiment Station, Bulletin 73, 1906.
> New Jersey Agricultural Experiment Station, Annual Report, 1905 (p. 368).
> Delaware College Agricultural Experiment Station, Bulletin 81, 1908.
> South Carolina Agricultural Experiment Station, Bulletins 103 (1905) and 123 (1906).
> Pennsylvania Department of Agriculture, Bulletin 130, 1904.
> Oklahoma Agricultural Experiment Station, Bulletin 74, 1907.
> Illinois Agricultural Experiment Station, Circular 69, 1903.

Calivant.—Briefly described in Transactions of the Virginia State Agricultural Society, 1853 (vol. 1, p. 173), as follows: "A small, round, white pea, good bearer, and making good crop of vines; better as a variety for the table." See also Calavance.

Calvins.—Mentioned without descriptive notes in Bulletin 62, Louisiana Experiment Station, series 2, 1900. Probably the same as Colvin.

Camden.—See Early Camden.

Capehart's Red Pea.—Described in Bulletin 98, North Carolina Agricultural Experiment Station, 1894, p. 142, as follows:

> Seems to be a strain of the Red Ripper; has larger seeds and seems to be rather more prolific; herbage about the same.

Cardinal.—See 0599 under 17349.

Carolina.—Name without description published in Bulletin of the Tennessee Agricultural Experiment Station, 1898 (vol. 11, no. 3, p. 95).

Carramunny-pyre.—See 21294.

Chang kiang tou.—See 23214.

Chauli.—See Choli, also 17376.

Chavali.—See Choli, also 21602.

Chickasaw.—Described by Ruffin (Essays and Notes on Agriculture, 1855, p. 353), as a favorite early red pea, said to be very productive but not as productive as the Shinney. Later writers use the name principally as applying to the mung bean (*Phaseolus radiatas*).

Chinese Browneye.—See 17329.

Chinese Red.—See 17328.

Chinese Whippoorwill.—See 17330.

Chocolate.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 181), as follows:

> Semirecumbent; vigorous; medium leaf and stalk; blossom—wings white, vexillum purple; form, kidney; pod, medium yellow; pea, medium brown (or chocolate), mottled on white ground, wrinkled; very early; light yielder of vines; moderate producer of peas.

Descriptive and agronomic notes also occur in Bulletins 53 (1898) and 62 (1900), series 2, Louisiana Experiment Station; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Chola.—See Choli, also 21296.

Choli.—A vernacular name employed in India for both the catjang and the cowpea. Variant spellings of this word are Chauli, Chola, Chowall, Chowlee, and Chavali. See 17377.

Chowder.—Mentioned without description in Bulletin 160, Kansas Agricultural Experiment Station, 1909.

Chowlee.—See Choli, also 21296.

Claret-Colored Crowder.—Described in Farmers' Register, 1835 (vol. 2, no. 12, p. 752), as follows:

> Possesses all the most valuable qualities of the cow or Yeatman pea, together with such a degree of hardiness that many of them will remain in the ground all winter and come up in the following spring. Of this fact I was assured by the North Carolina gentleman who gave them to me. He also stated that they were deemed more valuable in that State—at least in the eastern part of it—than any other Indian pea; so much, indeed, that in renting out land, it was a common stipulation that the whole of the corn land should be planted with these peas, from a general belief that, if the vines were all left on the ground it might be cultivated every year without being impoverished.

Clay.—The first published reference to a variety under this name seems to be in Transactions of the Virginia State Agricultural Society, 1853 (vol. 1, p. 173), as follows:

> The Clay or Gray pea is a gray or light yellow, a good bearer, and yields heavy vines. It is a soft pea, and for this reason is preferred by stock and hogs to the coarser varieties, such as Tory, etc. Not so forward as the Shinney pea, nor will it bear so late. Is a heavy pea. Preferred for stock and perhaps more generally cultivated than any other variety. Will not bear exposure to bad weather. Is liable to be stained and turned dark by wet.

See also 17340.

Claybank.—This name, which is perhaps merely an amplification of the word "Clay," has been published by a number of writers. In the American Agriculturist, 1876 (vol. 35, p. 139), it is described as "drab, usually dark at the eye." In Bulletin 146, North Carolina Agricultural Experiment Station, 1897 (p. 251), brief agronomic notes are given.

Clay Colored.—This name is probably merely an amplification of the name Clay. Published in Bulletin 12, Nebraska Agricultural Experiment Station, 1890.

Clovin.—Name with very brief description published in The Cowpea, a publication of the North Carolina Horticultural Society, issued about 1906. It is perhaps merely a misprint of Colvin.

Coffee.—The following description occurs in Bulletin 26, Georgia Experiment Station, 1894 (p. 181):

> Tall, upright grower, does not run at all; heavy stalk; leaf, medium and dark green; form, kidney; pod, large, yellow; pea, medium, brown mottled, on white ground; medium early; yield of vines, large; of peas, very large.

Apparently the same variety is described in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 582). Agronomic and descriptive notes under this name have also been published in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; Bulletin 53, series 2, Louisiana Experiment Station, 1898; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896. It is doubtful, however, if all of these notes refer to the same variety. In eastern North Carolina the name "Coffee" is also more or less used for the Taylor variety.

Collard.—See Green Collard.

Colvin.—This is described in Bulletin 29, series 2, Louisiana Experiment Station, 1894 (p. 1044), as follows:

> Colvin is a medium large, light-red pea, resembling somewhat the Red Ripper. It is the bunch kind, very prolific and early, fruiting in 8 or 9 weeks. Not much vine.

Descriptive notes also occur in Bulletins 29, series 2 (1894), and 72, series 2 (1902), Louisiana Experiment Station; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Conch.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 181), as follows:

> Flattest grower of all the peas; lies close to the ground like a sweet potato vine; weak and slow grower; light-green leaves; pod, medium yellow; pea, medium white; unproductive; very late and absolutely worthless.

Agronomic and descriptive notes under this name also occur in the following publications:

> Arkansas Agricultural Experiment Station, Bulletins 31 (1894) and 80 (1903); Annual Report, 1895 (p. 12.).
> Louisiana Experiment Station, bulletins 21 and 22 (1889), 7, series 2 (1891), 16, series 2 (1892), and 62, series 2 (1900).
> Georgia Experiment Station, Bulletin 26, 1894.
> Texas Agricultural Experiment Station, Bulletin 34, 1895.
> Mississippi Agricultural Experiment Station, Bulletin 40, 1896.
> Delaware College Agricultural Experiment Station, Annual Reports for 1892 (p. 32) and for 1895 (p. 8).
> North Carolina Agricultural Experiment Station, Bulletin 98, 1894.

Congo—Described in Bulletin 26, Georgia Experiment Station, 1894, p. 181, as follows:

> Recumbent, though not a trailer; leaf and stalk moderately large; light green; blossom light lilac; form kidney; pod large, yellow; pea, very large, jet black; very early; yield of vines, moderate; of peas, heavy.

Descriptive and agronomic notes also occur in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896. It is apparently identical with Early Black, 17336.

Constitution.—This variety is described in Bulletin 26, Georgia Experiment Station, 1894 (p. 181), as follows:

> Semirecumbent, but does not trail; leaf and stalk small, medium green; handsome grower; blossom pale lilac; form kidney; pod small, yellow; pea, very small, jet black; very late; yield of vines, heavy; of peas, lightest in the list.

Descriptive and agronomic notes also occur in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Cotton Patch.—See 29291.

Couch.—Apparently a misprint for Conch. Under this name notes occur in Circular 69, Illinois Agricultural Experiment Station, 1903; and in Bulletin 130, Pennsylvania Department of Agriculture, 1904.

Cream.—See 17693.

Cream White.—Published in the 1896 catalogue of the N. L. Willet Seed Co., Augusta, Ga., by name only.

Crowder.—This name is properly used for any variety of the cowpea in which the seeds are so closely placed in the pods as to be flattened at the ends. Crowder varieties occur in nearly all of the seed colors. The name, however, without any qualifying adjective, has sometimes been applied to a particular variety, as in Bulletin 77, Arkansas Agricultural Experiment Station (p. 31); and in Bulletin 6, New Mexico Agricultural Experiment Station, 1892.

Cuckold's Increase.—A name used in the West Indies for various varieties of cowpeas, but perhaps mainly for varieties with white or nearly white seeds. The descriptive notes of the older writers, such as Hughes (Natural History of Barbados, 1750, p. 216), Lunan (Hortus Jamaicensis, 1814, p. 435), and Romans (Natural History of East and West Florida, 1775), are insufficient to identify the variety definitely. MacFadyen (Flora of Jamaica, 1857, vol. 1, p. 288) states that the seeds of Cuckold's Increase are said to be "light-reddish buff."

Delicious.—See 17373.

Dennis's Field.—Published as a synonym of White Table in the American Agriculturist (vol. 35, 1876, p. 139).

Dixie.—Descriptive and agronomic notes on a variety of this name are published in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

Downs Early Ripener.—See 17331. Identical with New Era.

Dwarf Whippoorwill.—Agronomic and descriptive notes were published on this variety in various bulletins of the Louisiana Experiment Station, especially Nos. 22 and 27, 1889. Probably same as Whippoorwill.

Early Amber.—A variety under this name is mentioned by Prof. C. L. Newman in the Orange Judd Farmer (vol. 38, 1905, p. 673).

Early Black.—See 17336.

Early Blackeye.—See 17335.

Early Boolock.—See 8418.

Early Brown Dent.—Descriptive and agronomic notes under this name are given in Bulletin 118, Alabama Agricultural Experiment Station, 1902; and in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

Early Bulloch.—Descriptive and agronomic notes under this name are given in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Bulletin 118, Alabama Agricultural Experiment Station, 1902.

Early Bush.—See quotation on page 36.

Early Camden.—Identified as Conch by C. R. Ball.

Early White Blackeye.—Mentioned without description in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900 (p. 466).

Eureka.—Mentioned by name only in Bulletin of the Tennessee Agricultural Experiment Station, 1898, (vol. 11, no. 3, p. 95).

Everlasting.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 181), as follows:

> *Everlasting.*—Semirecumbent; small leaf and stalk; light green; blossom, light lilac; form, kidney; pod, medium yellow; pea, small, pinkish buff; late; yield of vines, heavy; of peas, very light; said to remain in the ground all winter without injury.

Notes under this name have also been published in Bulletin 34, Texas Agricultural Experiment Station, 1895; Bulletin 40, Mississippi Agricultural Experiment Station, 1896; Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Bulletin 62, series 2, Louisiana Experiment Station, 1900. There is reason to believe that this variety is identical with Iron.

Extra Early.—Mentioned without description in Bulletin 160, Kansas Agricultural Experiment Station, 1909.

Extra Early Blackeye.—Descriptive notes have been published in Bulletin 98, Kentucky Agricultural Experiment Station, 1902. Agronomic notes are also published under this name in Bulletin 70, Arkansas Agricultural Experiment Station, 1901 (No. 17335); Bulletin 118, Alabama Agricultural Experiment Station, 1902; Bulletin 103, South Carolina Agricultural Experiment Station, 1905; Bulletin 73, Missouri Agricultural Experiment Station, 1906; Bulletin 81, Delaware College Agricultural Experiment Station, 1908; and in Bulletin 160, Kansas Agricultural Experiment Station, 1909.

Extra Early Browneye.—Agronomic notes are published under this name in Bulletin 53, series 2, Louisiana Experiment Station, 1898.

Field White Table.—Mentioned by name only in the 1896 catalogue of the N. L. Willet Seed Co., Augusta, Ga.

Flat Red.—The following descriptive notes are from Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 583):

> *Flat Red.*—Vine erect and runs vigorously; first ripe September 20; pods, medium length, fairly well filled with small flat peas; yield per acre, 12.4 bushels; sown May 11.

Notes under this name are also published in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; and in Bulletin 62, series 2, Louisiana Experiment Station, 1900.

Flint.—Mentioned by name only in the 1910 catalogue of the N. L. Willet Seed Co., Augusta, Ga.

Forage.—The following description is from Bulletin 26, Georgia Experiment Station, 1894 (p. 181):

> *Forage or Shinney.*—Semirecumbent; trails; makes an enormous amount of vines; leaf and stalk small, but dark green and vigorous; blossoms, purple; form, kidney; pod, large, yellow; pea, medium, jet black; very late; yield of vines, very heavy; of peas, light.

Under the same name descriptive and agronomic notes are given in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

Forty-Day.—Under this name a variety is advertised in the 1904 catalogue of the J. Steckler Seed Co., New Orleans, La.

Gallavant or Galivant or Gallivant.—See also Calavance. Descriptive and agronomic notes occur in Bulletin 84, Mississippi Agricultural Experiment Station, 1904; and agronomic notes in Bulletin 160, Kansas Agricultural Experiment Station, 1909. In seed catalogues this name is commonly published as a synonym of Lady.

Gentleman pea.—See extract published under "Ladies pea," page 56.

Giang don.—See 22903.

Gourd.—This is described in Bulletin 26, Georgia Experiment Station, 1894 (p. 181), as follows:

> *Gourd.*—Synonyms: Mathews, Polecat. An excellent pea, but too much of a runner on rich land; large amount of foliage, though leaf and stalk are small; very vigorous; blossoms—wings white, vexillum purple; form, kidney; pod, very long, sometimes 18 inches, yellow; pea, large, black blotches on white ground—hence its synonym "Polecat;" very late, but productive, both in vines and peas.

Under the same name descriptive and agronomic notes are published in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; Bulletin 62, series 2, Louisiana Experiment Station, 1900; Bulletin 34, Texas Agricultural Experiment Station, 1895; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896. Apparently in all cases where this name is used it is exactly synonymous with Taylor.

Granite Crowder.—Described in the Industrialist, Kansas State Agricultural College (vol. 28, 1902, p. 462). Probably identical with Taylor Crowder.

Gray.—See citations on pages 35 and 36.

Grayeye.—See 17390.

Gray Goose.—This name is usually, if not always, an exact synonym of Taylor. Agronomic notes under this name have been published in the following:

> Arkansas Agricultural Experiment Station, Bulletin 70, 1901.
> Illinois Agricultural Experiment Station, Circular 69, 1903.
> South Carolina Agricultural Experiment Station, Bulletins 103 (1905) and 123 (1906).
> Pennsylvania Department of Agriculture, Bulletin 130, 1904.
> Kansas Agricultural Experiment Station, Bulletin 160, 1909.

Gray Prolific.—Notes on a variety under this name were published in Bulletin 61, Cornell University Agricultural Experiment Station, 1893 (p. 335).

Grecian.—See 17333. Agronomic notes are published in Bulletin 81, Delaware College Agricultural Experiment Station, 1908.

Green.—Descriptive and agronomic notes are published in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Green Collard.—Described in Bulletin 53, series 2, Louisiana Experiment Station, 1898 (p. 45), as follows:

> Presents every shade from a dirty white to a blue black. Unfortunately, the contrast does not show as nicely in the photograph as it does to the eye. The normal seed of this variety is a dirty white with dark stipple-like dots, giving it a darker color about the eye. It was noticed that some of these seeds were a little darker than others, and some of the darkest ones were selected for a separate planting. As a result from this harvest some seeds were obtained that were considerably darker than the ones planted, while others were not as dark, the majority returning to the ordinary color of the normal seed.

Green Colored.—Described in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 583), as follows:

> *Green Colored.*—A greenish pea with vine very erect and running vigorously; first ripe September 18; pods medium length, well filled with small peas; yield per acre, 17.5 bushels; sown May 11.

The name may perhaps be a corruption of Green Collard.

Green-Eye White.—Described by Ruffin, Essays and Notes on Agriculture, 1855 (p. 355), as follows:

> A small pea, of delicate flavor, and valued for table use by those who would reject the early black because of the dark and ugly appearance when cooked. The growth is too small for use as a stock-feeding or manuring crop.

Grey Crowder.—Descriptive and agronomic notes are published in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

Grey-Eye.—A variety advertised by the Amzi Godden Seed Co., Birmingham, Ala., in 1905. Same as Grayeye.

Groit.—See 17334.

Guernsey.—See 17408.

Guess.—A synonym of Iron, according to an unnumbered pamphlet on the Iron cowpea, published by the United States Department of Agriculture, January 16, 1904.

Gungi Rawani.—See 21295.

Halesteine.—Agronomic notes published in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31). Apparently a typographical error for Holstein.

Hammond's Black.—Agronomic notes published in Bulletin 160, Kansas Agricultural Experiment Station, 1909. See 29292.

Hammond's Extra Early.—Agronomic notes published in Special Bulletin 28, Experiment Station of Michigan Agricultural College, 1904.

Han chiang doh.—See 23307.

Hollybrook.—Agronomic notes published under this name in Circular 69, Illinois Agricultural Experiment Station, 1903; and in Bulletin 130, Pennsylvania Department of Agriculture, 1904.

Holstein.—See 17418.

Indian.—This name was once originally applied to all cowpeas. See "A Description of South Carolina," by B. R. Carroll, Historical Collections of South Carolina, vol. 2, 1710 (p. 248); American Husbandry by "An American," 1775 (pp. 447, 448); and article from Farmers' Register, 1835, quoted under "Claret-Colored Crowder" (p. 50). The name was apparently based on the supposition that the plant was native to America and cultivated by the Indians. In later years the name has been applied to a variety having red-and-white blotched seeds. Under this varietal name descriptive and agronomic notes occur as follows:

Louisiana Experiment Station Bulletins (ser. 2) 27 (1889); 8 (1891); 16 (1892); 19 (1892); 29 (1894); 40 (1896); 62 (1900); and 72 (1902).
Mississippi Agricultural Experiment Station, Bulletin 40, 1896.
Illinois Agricultural Experiment Station, Circular 69, 1903.
Pennsylvania Department of Agriculture, Bulletin 130, 1904.

Indian Red.—Agronomic notes on a variety under this name published in Bulletin 28 series 2, Louisiana Experiment Station, 1894.

Innominate.—Said to be identical with Unknown. Notes, either descriptive or agronomic, published in bulletins of the North Carolina Agricultural Experiment Station Nos. 133 (1896) and 146 (1897).

Iron.—See 8418.

Ironclad.—A synonym of Iron, published in 1908 catalogue of the N. L. Willet Seed Co., Augusta, Ga.

Iron Mountain.—See 17423.

Java.—Agronomic notes published in Bulletin 11, Minnesota Agricultural Experiment Station, 1890 (p. 96). This name, and also Speckled Java, and its corruptions Jervy and Jervis, are probably older names for Taylor.

Jervis.—See Java.

Jervy.—See Java.

Jhunga.—A vernacular name applied in India to the cowpea or the catjang.

Joiner's Long-Pod.—See sitation on page 36.

Jones's Perfection White.—Agronomic notes published in Bulletin 118, Alabama Agricultural Experiment Station, 1902. Probably the same as Jones's White.

Jones's White.—Descriptive notes published in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and agronomic notes in Bulletins 118 and 120, Alabama Agricultural Experiment Station, 1902.

Juroku sasage.—See 6311.

Katikha.—A vernacular name applied to a catjang from India.

King.—Under this name descriptive and agronomic notes have been published in various bulletins of the Louisiana Experiment Station, namely, Nos. 22 and 27 (ser. 1), and Nos. 8, 16, 19, 29, 40, and 72 (ser. 2); also in Bulletin 40, Mississippi Agricultural Experiment Station, 1896. It is described as having large black-and-white pied seeds.

Kintohi.—See 6328.

Kurakake.—See 6327.

Kutohi.—See 6328.

Ladies pea.—Under this name the following description in the Farmers' Register, 1835 (vol. 2, p. 752), occurs:

> The Ladies' pea, as some call it, or the Gentleman pea, as it is called by others, is the smallest I know; the most tasteless of all that I have ever tried; another variety differs from that last mentioned only in size and in being somewhat longer in proportion to its thickness. The only name which I have ever heard given to this was "the Gentleman pea," and it is well christened, if the term gentleman, according to little Harry Sanford's notion, means something that is good for nothing.

Lady.—See 17359.

Lady Finger.—Advertised in the 1905 catalogue of the Amzi Godden Seed Co., Birmingham, Ala. See 17388.

Lal-rawani.—See 21292.

Large Black.—Ruffin, Essays and Notes on Agriculture, 1855 (p. 355), describes this variety as follows:

> *Large Black or Tory* (*late*) *pea.*—This is as great a vine bearer as the Buff pea, and still later in ripening. The seeds have a very thick skin and will lie through winter on the ground, unrotted, and sprout in spring. The pods burst open soon after ripening and scatter and waste the seeds, which is the great defect of this [variety] as a manuring crop.

Large Blackeye.—Under this name descriptive or agronomic notes have been published as follows:

> Mississippi Agricultural Experiment Station, Bulletins 40 (1896), 83 (1904), and 84 (1904).
> Arkansas Agricultural Experiment Station, Bulletins 70 (1901) and 80 (1903).
> Texas Agricultural Experiment Station, Bulletin 59, 1901.
> Alabama Agricultural Experiment Station, Bulletin 118, 1902.
> Kentucky Agricultural Experiment Station, Bulletin 98, 1902.
> Virginia Agricultural Experiment Station, Bulletin 149, 1903.
> Illinois Agricultural Experiment Station, Circular 69, 1903.
> Pennsylvania Department of Agriculture, Bulletin 130, 1904.
> New Jersey Agricultural Experiment Station, Annual Report, 1905.
> Kansas Agricultural Experiment Station, Bulletin 160, 1909.
> North Carolina Department of Agriculture, Bulletin (vol. 31, no. 6), 1910.

Large Early Black.—Agronomic notes under this name were published in Bulletins 118 and 120, Alabama Agricutural Experiment Station, 1902.

Large Lady.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 181), as follows:

> *Large Lady.*—Recumbent; small leaf and stalk; medium green in tint; vines vigorous; trail slightly at ends; pure white bloom; form, kidney; pod, small, yellow; pea, small, white; medium early; heavy producer of both peas and vines.

Descriptive and agronomic notes also occur in Bulletin 40, Massachusetts Agricultural Experiment Station, 1896.

Large Red.—Descriptive and agronomic notes under this name occur in Bulletin 34, Texas Agricultural Experiment Station, 1895; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Large White.—Under this name descriptive notes occur in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 583), as follows:

> *Large White.*—Vine a vigorous grower, running low and near the ground; first ripe July 30; pods long and well filled with large white peas; yield per acre, 17 bushels; sown May 11.
>
> *Large White or Purple Hull.*—A white pea with black eye; vigorous grower, erect, and running habits; first ripe August 15; pods, long and well filled with large, black-eyed peas; yield per acre, 17 bushels; sown May 11.

Agronomic and descriptive notes also occur in bulletins of the Louisiana Experiment Station Nos. 22 and 27 (ser. 1), and Nos. 8, 16, 28, 29, and 40 (ser. 2); and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Large White Blackeye.—Descriptive and agronomic notes on this variety are published in Annual Report, Arkansas Agricultural Experiment Station, 1890 (p. 131); and agronomic notes in Bulletin 118, Alabama Agricultural Experiment Station, 1902; and in Bulletin 72 (ser. 2), Louisiana Experiment Station, 1902.

Large White Crow.—Name only published in Bulletin 77, Arkansas Agricultural Experiment Station, 1903 (p. 31).

Large White Crowder.—Agronomic notes published in Bulletin 118, Alabama Agricultural Experiment Station, 1902.

Large White Spot.—See 22726.

Large Yellow-Eye.—Mentioned by name only in the 1909 catalogue of the N. L. Willet Seed Co., Augusta, Ga.

Leland.—Agronomic notes published in Bulletin 118, Alabama Agricultural Experiment Station, 1902 (p. 13).

Lestones.—See 6228.

Lilac Red-Pod.—This is described in Bulletin 26, Georgia Experiment Station, 1894 (p. 181), as follows:

> Recumbent; moderate-sized leaf and stalk, but dark green and vigorous; an even, pretty grower; blossom white; form kidney; pod dark reddish brown or black, medium sized; pea large with lilac-colored mottles on white ground; medium early; light producer of both peas and vines.

Agronomic and descriptive notes also occur in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Little Iron.—A name sometimes used for the Iron.

Little Lady.—Probably the same as Lady. Name published in Bulletin 21, Louisiana Experiment Station, 1889 (p. 275).

Liver.—Descriptive and agronomic notes published in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and agronomic notes in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900.

Lobia.—A vernacular name for cowpeas and catjangs in parts of India. See 21791.

Long Lady.—See 17401.

Louisiana Wild.—See 17405.

Macassar.—A name applied to all cowpeas in Brazil, according to Mr. W. Fischer. See 21006 and 21299.

Mammoth Black.—Agronomic notes published under this name in Bulletin 199, Michigan Agricultural Experiment Station, 1902; and in Bulletin 130, Pennsylvania Department of Agriculture, 1904.

Mammoth Clay.—Agronomic notes published under this name in Bulletin 199, Michigan Agricultural Experiment Station, 1902; and in Bulletin 130, Pennsylvania Department of Agriculture, 1904.

Masri.—See 25016.

Mathews.—A synonym of Gourd, which see. Descriptive and agronomic notes under this name have been published also in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

McNiel.—Notes are published on this variety in Bulletin 14, Florida Agricultural Experiment Station, 1901, as follows:

> The McNiel pea, which originated in this town (Lake City), and popular as a shipper, being a good bearer and hardy, was also tested. It is a little later than the very early varieties, but a bunch pea of good size and full pod. This pea is very scarce and all raised were saved for seed. Popular market pea and desired by shippers.

Mealer's Clay.—A typographical error for Melear. See Bulletin of the North Carolina Department of Agriculture (vol. 31, no. 6), 1910.

Melear.—See 17383.

Michigan Favorite.—See 13472.

Miller.—See 29301.

Monkey's Tail.—See 24213.

Mottled.—Agronomic notes published in Bulletin 81, Delaware College Agricultural Experiment Station, 1908. This name has been used as a synonym of Shinney, which see.

Mount Olive.—Agronomic notes published in Bulletin 77, Arkansas Agricultural Experiment Station, 1903; and in Bulletin 160, Kansas Agricultural Experiment Station, 1909. See 17340.

Mountain Crowder.—See 29288.

Mush.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> Semirecumbent; large leaf and stalk; vines trail at ends; blossom, purple; form, crowder; pod, small, yellow; pea, medium, white; medium early; yield of vines, moderate; of peas, very heavy.

Agronomic or descriptive notes are also published in the following:

Delaware College Agricultural Experiment Station, Bulletin 46, 1900.
Louisiana Experiment Station, Bulletin 62, series 2, 1900.
Alabama Agricultural Experiment Station, Bulletin 118, 1902.
Texas Agricultural Experiment Station, Bulletin 34, 1895.
Mississipi Agricultural Experiment Station, Bulletin 40, 1896.
Minnesota Agricultural Experiment Station, Bulletin 11, 1890.

New Era.—See 21088.

New Revenue.—A name published in the 1910 catalogue of William Henry Maule, Philadelphia, Pa. Exactly the same as Michigan Favorite.

Nigger.—Described and illustrated in the Industrialist, Kansas State Agricultural College, 1902 (vol. 28, p. 462). "Seeds black, small."

No Name.—A synonym of Unknown, published in Bulletin 133, North Carolina Agricultural Experiment Station, 1896.

Northern Prolific.—Agronomic notes published in Bulletin 130, Pennsylvania Department of Agriculture, 1904, and in Circular 69, Illinois Agricultural Experiment Station, 1903. Same as Sherman's Northern Prolific.

Old Man.—See 17354.

Old Man's Friend.—A synonym of Pea of the Backwoods.

Pale Red.—Described in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 583), as follows:

> *Pale Red.*—A pale, red variety; vine medium growth, erect, and bunched; first ripe September 25; pods medium length, imperfectly filled with small, pale-red peas; yield per acre, 11.9 bushels; sown May 11.

Descriptive and agronomic notes are also published in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Panmure Early Wonder.—See 27199.

Pea of the Backwoods.—Described in Bulletin 22, Louisiana Experiment Station, 1889 (p. 319), as follows:

> This pea was brought to notice two years ago by the letters of Mr. Edward Fonville, of Onslow County, N. C., in the Southern Cultivator. It was recommended as the earliest bunch pea, and excellent for table use. It has so proved; two weeks ahead of any other, a larger bearer, and as a shell pea for table use, tender, marrowy, and palatable. Are ripe for table use just six weeks after planting. It is a bunch pea strictly, therefore, affording not much vine. The seeds are small, cream colored, slightly "pied." Very prolific. At Calhoun it matured in forty days. Two crops a year were grown on same ground last year at Baton Rouge.

Other notes occur in bulletins of the Louisiana Experiment Station No. 27 (1894), and in (ser. 2) Nos. 8, 16, 19, 29; also in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Peerless.—See 25314.

Polecat.—A synonym of Gourd, which see. Agronomic and descriptive notes are published under this name in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Pony.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> *Pony.*—Recumbent; leaf and stalk of medium size, but dark green and vigorous; blossom, pure white; form, kidney; pod, small, yellow; pea, medium, white, wrinkled; heavy yielder of both peas and vines; medium early.

According to additional notes by Mr. C. R. Ball, the seeds are white with a black eye, medium sized, short and broad, and finely wrinkled. Descriptive and agronomic notes under this name also occur in Bulletin 46, Delaware College Agricultural Experiment Station, 1900, and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Poona.—Mentioned in the Agricultural Gazette, New South Wales, 1909 (vol. 20, p. 832). Mr. H. W. Potts, Richmond, New South Wales, says:

> This is a variety formerly called Upright. It was secured originally from Calcutta, India, and after eight years' testing is the best of all that we have tried.

Poor Man's Friend.—A synonym of Pea of the Backwoods. Described in Bulletin 19, series 2, Louisiana Experiment Station, 1892 (p. 540), as follows:

> Originated by Edward Fonville, of North Carolina. An early bunch pea, but little vine; ripening in six weeks from planting; seed small, cream colored, slightly pied; excellent for table purposes; two or three crops may be grown in a year.

Agronomic and descriptive notes occur also in Bulletins 21 and 22, Louisiana Experiment Station, 1889.

Powell's Early Prolific.—See 17392. Agronomic notes also occur in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31, no. 6). According to Dr. B. W. Kilgore, Raleigh, N. C., the origin of this variety is as follows:

> Powell's Early Prolific was obtained from William Powell, Merry Oaks, N. C. It is stated that he found six peas, five or six years ago, in some coffee, which he supposed came from Brazil. These seeds were planted, and the variety came in this way, according to our understanding.

Purple-Eye.—Descriptive and agronomic notes are given in Report of the Kansas State Board of Agriculture, 1900 (p. 504), as follows:

> The large Blackeye and Purple-Eye are typical of one another. * * * The Blackeye and Purple-Eye are of the same ground color, differing only in the color of the ring surrounding the eye.

Purple Hull.—Descriptive or agronomic notes under this name occur in bulletins (ser. 2) of the Louisiana Experiment Station, 28 and 29 (1894), 72 (1902), and 40 (1896). In Bulletin 40 (p. 1458) it is described as follows:

> Purple Hull, so called on account of color of hull; a large white pea; yield small, with fair amount of vines; medium early.

This variety has also been advertised by the Amzi Godden Seed Co., Birmingham, Ala., who write concerning it as follows:

> Very popular in our immediate section; grown principally for eating purposes, being of extra good quality; exceedingly prolific, very hardy, vigorous grower; produces great area of foliage and seems to be less bothered by weevil than many others; very large long pod, of a rich purple color, about the time the peas are mature.

Purple Hull Crowder.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> Semirecumbent; vines trail at end, but growth even and pretty; leaf and stalk small and dark green; bloom, purple; form, crowder; pod small, purplish black; pea, medium, dull red; very late; yield of vines, light; of peas, heavy.

Descriptive and agronomic notes also occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896, and in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

Quadroon.—Published as a synonym of Unknown in Bulletin 26, Georgia Experiment Station, 1894 (p. 183). The name is also published in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Queen of Carolina.—Agronomic but no descriptive notes occur under this name in Bulletin 146, North Carolina Agricultural Experiment Station, 1897.

Quick.—A variety advertised under this name by H. G. Hastings & Co., of Atlanta, Ga., No. 27930, not yet tested.

Ram's-Horn.—A variety with black-eyed white seeds, which has been advertised by Peter Henderson & Co., New York City, 1903, and by T. W. Wood & Sons, Richmond, Va., 1909 and 1910. The name first appears in Vilmorin's The Vegetable Garden, 1885 (p. 74), with the following description:

> *Dolichos unguiculatus* L.; Black-eyed Dolichos. Years ago Mr. Durieu de Maisonneuve, director of the botanic garden at Bordeaux, introduced a very singular variety of this plant, the pods of which instead of being straight are curved round and round, from which peculiarity it received the name of Ram's-Horn bean. Culture and uses are the same as those of the ordinary variety.

The name has also been applied by some seedsmen to a black-seeded variety.

Ram's-Horn Blackeye.—See 27548.

Rawan.—A name with various modifications, such as Rawang and Rawani, which is applied to the catjangs in various parts of India. See 21293 and 21297.

Red.—A name that has been quite generally applied to any red, i. e., maroon, colored cowpeas. A very early reference occurs in Lunan (quoted under "Calavance"). In Transactions of the Virginia State Agricultural Society, 1853 (vol. 1, p. 173), it is described as follows:

> *The Red, Tory, or Bass pea.*—Its distinguishing characteristic is its ability to withstand wet and bad weather; a very valuable crop for late winter feeding of hogs and stock. Will last through the winter. A hard coarse pea, and stock will not eat it as long as the softer kinds last. A good bearer; yields a very heavy crop of vines. Does not mature early. Is a dark chocolate red, and its color is not affected by the weather; said to volunteer.

Ruffin, Essays and Notes on Agriculture, 1855, also describes a "Red" cowpea. (See quotation under "Bass.") In recent literature descriptive or agronomic notes occur as follows:

> Georgia Experiment Station, Bulletin 26, 1894.
> Louisiana Agricultural Experiment Station, Bulletins (ser. 2) Nos. 40 (1896) and 72 (1902).
> Mississippi Agricultural Experiment Station, Bulletin 40, 1896.
> Delaware College Agricultural Experiment Station, Bulletins 46 (1900) and 81 (1908).
> Kentucky Agricultural Experiment Station, Bulletin 98, 1902.
> Illinois Agricultural Experiment Station, Circular 69, 1903.
> Pennsylvania Department of Agriculture, Bulletin 130, 1904.
> Missouri Agricultural College Experiment Station, Bulletin 73, 1906.

It is impossible to identify any of these excepting where pedigreed seed may still be available. See also notes under "Red Ripper" and "Red Crowder."

Red-and-White Speckled.—Described in Bulletin 34, Texas Agricultural Experiment Station, 1895, as follows:

> *Red-and-White Speckled* (*Red Pod*).—A red pea with white specks; vine vigorous, running low and near the ground; first ripe September 7; pods medium length, imperfectly filled with peas of medium size; yield per acre, 12.5 bushels; sown May 11.

Red Carolina.—This name appears in the 1905 catalogue of T. W. Wood & Sons, Richmond, Va., and agronomic notes have been published in Bulletin 168, Virginia Agricultural Experiment Station, 1907. See 17519.

Red Cow.—See citation on page 36.

Red Crowder.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> Recumbent; lies quite flat; leaf and stalk of moderate size, but of good color and vigorous; peas radiate in bunches horizontally and at right angles to stem; blossom light purple; form, crowder; pod, very small, yellow; pea, medium, dull red; early; yield of vines, medium; of peas, heavy.

Descriptive or agronomic notes also occur in the following:

> Mississippi Agricultural Experiment Station, Bulletin 40, 1896.
> Texas Agricultural Experiment Station, Bulletin 34, 1895.
> Delaware College Agricultural Experiment Station, Bulletins 46 (1900) and 81 (1908).
> North Carolina Department of Agriculture, Bulletin, 1910 (vol. 31, no. 6). See also 17361.

Red-Eye.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> Trails; leaf and stalk, medium, light green; blossom—wings white, vexillum purple; pod, medium, blue black; pea, medium, white with red eye; early; light yielder of both peas and vines.

Descriptive or agronomic notes also occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900.

Red-Eyed Red Pod.—Described in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 583), as follows:

> *Red-Eyed Red Pod.*—A white pea with red eye; vine made a moderate growth, running low and near the ground; first ripe September 7; pods medium length, well filled with peas of medium size; yield per acre, 14.3 bushels; sown May 11.

Red-Hulled White.—See citation on page 36.

Red Iron.—A name published in the Agricultural News, Barbados, 1909 (vol. 8, p. 173). This variety, grown in Victoria, Australia, was said to have been found originally mixed with the seed of ordinary Iron. It is stated to be similar to the Iron in habit, pods maturing in 115 days as against 106 for the Iron.

Red Pod.—This is very briefly described in Bulletin 40, Mississippi Agricultural Experiment Station, 1896, as having "mottled and speckled" medium-sized seeds.

Red Ripper.—See 17350.

Red River.—Agronomic notes occur in Bulletin 160, Kansas Agricultural Experiment Station, 1909. Probably a misprint for Red Ripper.

Red Running.—Descriptive and agronomic notes occur in the Annual Report of the Arkansas Agricultural Experiment Station for 1890 (p. 131):

> Produces much vines but less productive of peas; vines grow very long and lie flat, remaining green long after peas have ripened; the pods were long and well filled, medium size, of dark-red color.

Red Sport.—See 29290.

Red Tory.—Described in Bulletin 19 (ser. 2), Louisiana Experiment Station, 1892 (p. 541), as follows:

> A red pea of wonderful powers of vitality, often remaining sound in the soil for many months. The matured pods on the vines which are turned under in the fall, on land planted in small grain, will germinate and give a good crop of peas after the grain has been harvested. Produces a large amount of vines and foliage; one of the best for green manuring; remains green till frost.

Agronomic notes also occur in Bulletin 146, North Carolina Agricultural Experiment Station, 1897.

Red Unknown.—Agronomic notes occur in Bulletin 103, South Carolina Agricultural Experiment Station, 1905, and in Bulletin 160, Kansas Agricultural Experiment Station, 1909.

Red Whippoorwill.—See 17374.

Red Yellowhull.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> Semirecumbent; leaf and stalk medium; dark green; blossom, violet; form, kidney; pod, medium, yellow; pea, large, dull red; early; yield of vines, medium; of peas, very heavy.

Descriptive or agronomic notes also occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900. See 29286.

Red Yellow Pod.—This name appears with brief descriptive notes in The Cowpea, published by the North Carolina State Horticultural Society, about 1906. It is apparently a typographical error for Red Yellowhull.

Redding.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> Semirecumbent; small, light leaf and stalk, but vigorous, making a large amount of vines; purple bloom; form, kidney; pods, very small, yellow; pea, small, dull red; very late; yield of vines, very heavy; of peas, very light.

Descriptive and agronomic notes also occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896, and in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

Regular Lady.—This name is mentioned in Bulletin 28 (ser. 2), Louisiana Experiment Station, 1894 (p. 974). Perhaps synonymous with Lady.

Rice.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> Semirecumbent; small, light-green leaf and stalk; trails at end of vines; snow-white bloom; form, kidney; pod small, yellow; pea small, white; very late; yield of vines, medium; of peas, heavy.

In Bulletin 133, North Carolina Agricultural Experiment Station, 1896 (p. 342), additional descriptive notes occur as follows:

> Pea small, oval, white, semitranslucent, resembling rice; vine creeping; very vigorous grower; stem 4 to 8 feet long; leaves small to medium; matures in medium season, with us planted May 1, ripe October 10; yield of vines moderate, of seeds heavy. The table quality of this pea is considered superior to that of any other of the cowpea family. It deserves a more extended trial. The Station has a small supply for distribution to citizens of the State in spring of 1897.

Descriptive or agronomic notes also occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; in Bulletin 34, Texas Agricultural Experiment Station, 1895; and in Bulletin 168, Virginia Agricultural Experiment Station, 1907.

Ross White.—Agronomic notes occur in Bulletin 118, Alabama Agricultural Experiment Station, 1902 (p. 13).

Running Speckled.—This name is published in the 1908 catalogue of the N. L. Willet Seed Co., Augusta, Ga. It is the same variety which has since been called Peerless.

Saddleback.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 182), as follows:

> Recumbent; leaf and stalk small, but dark green; form, kidney; pod medium, purplish black; pea small, with dark red mottles on white ground, wrinkled; early; yield light in both peas and vines.

Descriptive or agronomic notes also occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Bulletins 53 (ser. 2), 1898, and 62 (ser. 2), 1900, Louisiana Experiment Station.

Sand.—This name appears in the 1908 catalogue of Henry A. Dreer, Philadelphia, Pa., as a synonym of Southern Blackeye.

Sanjak sasage.—See 4974.

Sherman's Northern Prolific.—Grown for three years under the designation Agrostology 1213 by Mr. C. R. Ball, who reached the conclusion that it is identical with Warren's Extra Early.

Shinney, or Shinny.—A name commonly employed as a synonym of Whippoorwill. The first reference in literature seems to be in Transactions of the Virginia State Agricultural Society, 1853 (vol. 1, p. 173), as follows:

> Most valuable variety; a speckled pea; may be a cross between the Gray or Clay pea and the Blackeye. Very prolific, yielding on favorite soil, with good seasons, as much as fifty to one. Produces very heavy crop of vines. Matures early and continues to bear until frost. The pea is large and heavy, of delicate flavor, and excellent on the table. Hogs prefer it to the Tory, or Bass. Will not bear exposure to the winter; liable to mold and sprout after prolonged wet, followed by warm weather; however, equally hardy with the Gray or Clay pea and other varieties. Will not bear exposure to the winter like the Tory, or Bass, and the Black.

Ruffin, Essays and Notes on Agriculture, 1855 (p. 353), writes:

> The mottled or Shinney pea, which has been so much celebrated in latter years, differs in some respects from all others. The seeds are of a light-brownish color, thickly streaked or mottled with a deeper brown. It is deemed by farmers who have tried it longer and more fully than myself, to be one of the heaviest vine bearers, and also by far the most productive in grain. Mr. Robert Chisolm, of Beaufort, S. C., in 1850, first brought this pea into general notice. This gentleman, whose intelligence and observation deserve all respect, made careful comparisons both by observation and by weighings of this with other then most valued kinds of pea, and reported of them as follows, in the American Farmer, of May, 1851: "From the few seeds first obtained and planted in the spring, he gathered the earliest ripe seeds, and sowed them again in July, along with the cowpea (or buff?) obtained from four different localities, a red pea (called Chickasaw) said to be very productive, and also another favorite early pea. The products of seeds were not measured; but, to the eye, there was no doubt as to the superior production of the Shinney pea." [An accurate experiment is quoted showing a greater weight for the Shinney.] It is probable that the much greater weight of the pods of the Shinney was in some measure increased by the greater thickness of the covering hulls of this variety. Still there must have been also an important increase of the grain alone. This mottled or Shinney pea I saw in Pendleton, S. C., in 1843, and heard it recommended as a valuable kind by different farmers. One of them was the Hon. John C. Calhoun, who gave me a supply of seed. After some years' trial and of comparison by the eye of this with various other kinds, I abandoned the mottled pea for some of its peculiarities which recommended it to other persons. These were, first, the long time of successive ripening of the pods, requiring different times of gathering, and slow work; and second, the difficulty of beating out the seed, from the hard, tough, and closely joined hulls. But neither these nor any other objections counterbalance the greater productiveness of the mottled pea—which quality I did not test by measurement, and therefore did not suspect. I found the mottled pea began to ripen (it does not cease until killed by frost) soon after the Blackeye, and the pods were mostly ripe on August 26. * * * The green-eye white pea ripened next in order—the buff (or cow) next—two kinds of black peas (large and small grain) next, and last a red pea (probably the Bass) obtained from North Carolina. * * * The buff, both the blacks, and the red pea all exceeded the mottled in general growth of vine and leaf. It was also noted as a peculiar value found in the mottled pea, that the vines were pulled up, still green and full of leaves, after most of the pods were ripe and were thus cured for hay.

See also quotation from American Agriculturist, on page 36 of this bulletin. The name has not been much used in experiment station publications. As used in Bulletin 26, Georgia Experiment Station, 1894, it is for a black-seeded variety. (See citations under name Forage.) The "Shinney" described in Bulletin 40, Mississippi Agricultural Experiment Station, 1896, is probably the same as the last mentioned.

Shrimp.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 183), as follows:

> Semirecumbent; small, light-green leaf and stalk; trails slightly at ends of vines; blossom, light purple; form, kidney; pod, small, yellow; pea, small, clear pink; very late; yield of vines, medium; of peas, very light.

Descriptive and agronomic notes also occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896, and in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

Six-Oaks Field.—See quotation on page 36.

Sixty-Day.—See 17386. Agronomic notes published in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31, no. 6). Mr. G. T. Bulloch, Rocky Mount, N. C., writes as follows:

> I find after much inquiry that the Sixty-Day pea has been a distinct variety in this locality for 25 years. How and where it originated is

> unknown to the oldest settlers here. Until recent years this pea was grown only in small plots for table use, and think this is the reason it does not do so well broadcast.

Small Black.—Under this name agronomic notes occur in Ruffin's Essays and Notes on Agriculture, 1855 (p. 355), in Bulletin 118, Alabama Agricultural Experiment Station, 1902; in Annual Report, New Jersey Agricultural Experiment Station, 1905 (p. 370); and in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31, no. 6).

Small Blackeye.—Descriptive notes in Bulletin 84, Mississippi Agricultural Experiment Station, 1904, as follows: "Bunch variety, small seed, medium bearer, very early." Agronomic notes also occur in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31, no. 6).

Small Lady.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 183), as follows:

> Recumbent, trails at ends of vines; leaf and stalk small, but vigorous; pure white blossom; form, crowder; pod, very small, yellow; pea, very small, round, and white; may be a retrograded Sugar Crowder, though smaller and much earlier; yield of vines heavy, but of peas light.

Descriptive notes also occur in Bulletin 34, Texas Agricultural Experiment Station, 1895, and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896. Agronomic notes appear in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31, no. 6).

Small Red.—Descriptive notes appear in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 583), as follows:

> *Small Red, or Tory.*—Vine of medium growth, running low and near the ground; first ripe September 8; pods, long, well filled, with small, red peas; yield per acre, 16 bushels; sown May 11.

Descriptive notes occur also in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Small White.—Described in Bulletin 40 (ser. 2), Louisiana Experiment Station, 1896 (p. 1459), as follows: "Very late, small, white pea, with small yield of vines and berries." Agronomic notes also occur in Bulletins (ser. 2) Louisiana Experiment Station 62 (1900) and 72 (1902). Descriptive and agronomic notes appear in Bulletin 40, Mississippi Agricultural Experiment Station, 1896. Under the same name a variety is mentioned in Romans's Natural History of East and West Florida, published in 1775.

Small White India.—Agronomic notes under this name are published in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31, no. 6).

Smallpox.—See 24185.

Smiley.—A synonym of Iron. The name is thus published by Orton in an unnumbered pamphlet on the Iron cowpea, issued by the U. S. Department of Agriculture, January 16, 1904.

Smith.—Agronomic notes under this name are published in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Smith's No. 4.—Agronomic notes under this name are published in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900. This and other varieties bearing the name Smith were originally obtained from Mr. Pinckney Smith, of Duncan, S. C., who had in his collection about 40 different varieties in the year 1900.

Smith's No. 7.—Described as follows in Bulletin 26, Georgia Experiment Station, 1894 (p. 183):

> Recumbent; medium-sized leaf and stalk; dark green and vigorous; does not trail at ends of vines; pure white bloom; form, kidney; pod, small, yellow; pea, medium. Originated by Pinckney Smith, Duncan, S. C.

Smith's No. 9.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 183), as follows:

> Recumbent; short stalks; medium-sized leaf; blossom purple; form, kidney; pod, medium, yellow; pea, large, white; yield medium in both peas and vines.—*Pinckney Smith.*

Agronomic notes also occur in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900.

Smith's No. 14.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 183), as follows:

> Recumbent; trails slightly at ends of vines; moderate-sized leaf and stalk; medium green tint; blossom purple; form, crowder; pod, small, yellow; pea, small, white; very late; medium producer of both peas and vines.—*Pinckney Smith.*

Agronomic notes also occur in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900.

Smith's No. 15.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 183), as follows:

> Semirecumbent; does not trail at ends of vines; small leaf and stalk; dark-green tint; vigorous; bloom, white; form, kidney; pod, large, yellow; pea, medium, white; medium early; yield of vines, medium; of peas, light. Mr. Smith thought this the Rice pea, but it is entirely different.

Southdown.—This name seems to have been published in the 1902 catalogue of T. W. Wood & Sons, of Richmond, Va. See 17339. Agronomic notes occur in Bulletins 83 and 84, Mississippi Agricultural Experiment Station, 1904; in Circular 69, Illinois Agricultural Experiment Station, 1903; Bulletin 130, Pennsylvania Department of Agriculture, 1904; and in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31, no. 6).

Southdown Mottled.—Same as Southdown.

Southdown.—This name seems to have been published in the 1902 catalogue in general. It has sometimes been given to special varieties. (See 4316.) Agronomic notes concerning this were published by Orton in Bulletin 17, Bureau of Plant Industry, U. S. Dept. of Agriculture, 1902 (p. 19), and in Bulletin 149, Virginia Agricultural Experiment Station, 1903.

Southern Blackeye.—This name appears in the 1908 catalogue of Henry A. Dreer, Philadelphia, Pa. Agronomic notes under the same name have been published in Bulletin 168, Virginia Agricultural Experiment Station, 1907; and in Bulletin 57, New Hampshire Agricultural Experiment Station, 1898.

Southern Whippoorwill.—Probably the same as Whippoorwill. This name appears in the 1892 catalogue of William Henry Maule, Philadelphia, Pa.

Southern Yelloweye.—Agronomic notes occur in Bulletin 57, New Hampshire Agricultural Experiment Station, 1898, and in Bulletin 168, Virginia Agricultural Experiment Station, 1907. Samples of this variety received in 1903, under Agrostology 1494, show a small-seeded Browneye.

Speckled.—A name very commonly employed as a synonym of Whippoorwill. Descriptive and agronomic notes under this name appear in the following publications:

Arkansas Agricultural Experiment Station, Annual Report, 1890 (p. 131).
Minnesota Agricultural Experiment Station, Bulletin 11, 1890.
Louisiana Experiment Station, Bulletins (ser. 2) 28 (1894), 40 (1896), and 72 (1902).
North Carolina Agricultural Experiment Station, Bulletin 98, 1894.
Texas Agricultural Experiment Station, Bulletin 34, 1895.
Mississippi Agricultural Experiment Station, Bulletin 40, 1896.

Speckled Crowder.—Described in Bulletin 26, Georgia Experiment Station 1894 (p. 183), as follows:

> Recumbent, lies quite flat; small leaf and stalks of light-green tint; blossoms, purple; they close very early in the morning; form, of course, crowder; pod, medium, yellow; pea, large, with brown speckles on gray ground; very late; yield of vines, very light; of peas, heavy.

Descriptive or agronomic notes under the same name appear in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900; and in Annual Report, Arkansas Agricultural Experiment Station, 1890 (p. 131).

Speckled Java.—See quotation on page 36. Probably the same as Taylor. See 17412.

Speckled Rio.—A name locally used in parts of South Carolina for the Brabham.

Speckled Whippoorwill.—Probably the same as Whippoorwill. See quotation on page 36.

Speth.—Agronomic notes under this name are given in Bulletin 23, Georgia Experiment Station, 1893 (p. 105). No other information concerning this variety has been obtainable.

Sport.—See 17427.

Stewart.—Described in Bulletin 98, North Carolina Agricultural Experiment Station, 1894 (p. 142), as follows:

> Seeds blotched brown and white; grew fairly, herbage rather scant; pods ripened after Whippoorwill.

Agronomic notes also occur in Annual Report, Delaware College Agricultural Experiment Station, 1892 (p. 32), and in Bulletin 61, Cornell University Agricultural Experiment Station, 1893 (p. 335).

Sugar.—This name is mentioned in the Farmers' Register, 1835 (vol. 2, p. 752). See citation under "Indian." The name also appears with descriptive notes in Bulletin 40, Mississippi Agricultural Experiment Station, 1896, as follows: "Spherical; white; small seed; half trailing; late."

Sugar Crowder.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 183), as follows:

> Recumbent; small leaf and stalk; medium green; twists and trails at ends of vines; blossom—wings white, vexillum purple; form, crowder; pod, small, yellow; pea, small, white; quality, rich and sweet; the best table pea of all—so superior that birds will select it from all the other varieties; very late; yield of vines, light; of peas, heavy.

Descriptive and agronomic notes also occur in Bulletin 46, Delaware College Agricultural Experiment Station, 1900. Agronomic notes appear in Bulletin 28 (ser. 2), Louisiana Experiment Station, 1894. See also citation from the American Agriculturist on page 36.

Stranger.—Mentioned in the Agricultural Gazette, New South Wales, October 2, 1906, as "a promising new variety." The seeds are buff-and-white blotched.

Taylor.—See 17342.

Taylor's Prolific.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 183), as follows:

> Semirecumbent; small leaf and stalk; dark green and pretty; twists, but does not trail at ends of vines; pure white blossom; form, kidney; pod, medium, yellow; pea, medium, white; yield of vines, light; of peas, medium.

According to additional notes by Mr. C. R. Ball, the seed sample represented a medium-sized, short, kidney-shaped Blackeye. Descriptive and agronomic notes also occur in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

Tennessee Crowder.—Descriptive and agronomic notes of this variety appear in Bulletin 46, Delaware College Agricultural Experiment Station, 1900, as follows:

> Very early; a rather light vine, inclined to run some; pods borne on long stems, standing well above the vines; heavy yielder of peas with a fair weight of vine. Its chief merit is its earliness.

Three Crop.—See citation from Transactions of the Virginia State Agricultural Society, 1853, on page 36.

Torg.—This name is published in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 583), where it is said to be a synonym of Everlasting. The name also appears with brief descriptive and agronomic notes in Bulletin 40, Mississippi Agricultural Experiment Staton, 1896.

Tory.—For early use of this name, see quotations from Farmers' Register, 1835, on page 35; from Transactions of the Virginia State Agricultural Society, 1853, under "Red"; and Ruffin, Essays and Notes on Agriculture, 1855, on page 36. Under this name descriptive and agronomic notes have also been published in Bulletin 34, Texas Agricultural Experiment Station, 1895; in Bulletin 40, Mississippi Agricultural Experiment Staton, 1896; and in Bulletin 146, North Carolina Agricultural Experiment Station, 1897.

Townsend.—See 26844.

Tribus.—See quotation from Transactions of the Virginia State Agricultural Society, 1853, on page 36.

Tsai don.—See 22902.

Turney's Blackeye.—See 22050.

Two Crop.—This is briefly described in the 1910 catalogue of the Crenshaw Bros. Seed Co., Tampa, Fla. The name was apparently first published in the Industrialist, Kansas State Agricultural College, 1902 (vol. 28, p. 462), the seed color not being given. See 29291.

Unknown.—See 13468 and 27545.

Unknown Black.—See 27549.

Upright.—See 21934.

Vacuum.—This was first described in Bulletin 26, Georgia Experiment Station, 1894 (p. 183), as follows:

> Recumbent, short stems; small leaf, light to medium green; blossom, purple; form, kidney; pod, large, yellow, but with vacancies at intervals unfilled with peas—hence its name; pea, large, white, wrinkled; very early; yield of vines, very light; of peas, medium.

Descriptive and agronomic notes also appear in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; and in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1902.

Volunteer.—See 22054.

Warren.—See 11236.

Warren's Extra Early.—This varietal name seems to have been first published by William Henry Maule, Philadelphia, Pa., in the catalogue of 1899. It is there said to be the earliest of all varieties. Agronomic notes on it have been published by many of the experiment stations, as follows:

Arkansas Agricultural Experiment Station, Bulletins 70 (1901) and 80 (1903).
Illinois Agricultural Experiment Station, Circular 69, 1903.
Pennsylvania Department of Agriculture, Bulletin 130, 1904.

New Jersey Agricultural Experiment Station, Annual Report, 1905 (p. 368).
South Carolina Agricultural Experiment Station, Bulletins 103 (1905) and 123 (1906).
Missouri Agricultural Experiment Station, Bulletin 73, 1906.
Virginia Agricultural Experiment Station, Bulletin 168, 1907.
Oklahoma Agricultural Experiment Station, Bulletin 74, 1907.
Delaware College Agricultural Experiment Station, Bulletin 81, 1908.
Kansas Agricultural Experiment Station, Bulletin 160, 1909.
North Carolina Department of Agriculture Bulletin, 1910 (vol. 31, no. 6).

See also 17352.

Warren's Extra Early × *Sugar Crowder.*—See 17422. Agronomic notes published in Bulletin 81, Delaware College Agricultural Experiment Station, 1908.

Warren's New Hybrid.—This name was apparently first published by William Henry Maule, Philadelphia, Pa., in the seed catalogue for 1901, and is there said to be three weeks earlier than Warren's Extra Early. Under this name agronomic notes have been published by the following experiment stations:

Arkansas Agricultural Experiment Station, Bulletins 70 (1901) and 80 (1903).
Illinois Agricultural Experiment Station, Circular 69, 1903.
Pennsylvania Department of Agriculture, Bulletin 130, 1904.
South Carolina Agricultural Experiment Station, Bulletins 103 (1905) and 123 (1906).
New Jersey Agricultural Experiment Station, Annual Report, 1905 (p. 368).
Missouri Agricultural Experiment Station, Bulletin 73, 1906.
Delaware College Agricultural Experiment Station, Bulletin 81, 1908.
Kansas Agricultural Experiment Station, Bulletin 160, 1909.
North Carolina Department of Agriculture Bulletin, 1910 (vol. 31, no. 6).

See also 17345.

Watson's Hybrid.—See 17425.

Whippoorwill.—See 17349.

Whippoorwill Crowder.—See 17371.

Whippoorwill Saddleback.—See 17409.

White.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 184), as follows:

> Recumbent; small leaf and stalk, medium green; trails at ends of vines; white blossom; form, kidney; pod, medium, yellow; pea, very small, white; medium early; yield of vines, heavy; of peas, very heavy.

The original seed samples, according to Mr. C. R. Ball, represented a small to medium-sized, rather broad Blackeye. Under the same name descriptive and agronomic notes are published in The Cowpea, issued by the North Carolina State Horticultural Society.

White and Brown Speckled.—Described in Bulletin 34, Texas Agricultural Experiment Station, 1895 (p. 584), as follows:

> *White and Brown Speckled.*—A brown-and-yellow speckled variety. Vine made a moderate growth, erect and bunched; first ripe August 20; pods long and well filled with peas of medium size; yield per acre, 14.4 bushels; sown May 11.

Descriptive and agronomic notes occur in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

White Blackeye.—Agronomic notes under this name appear in bulletins (ser. 2) of the Louisiana Experiment Station, Nos. 28 (1894) and 62 (1900).

White Browneye.—Agronomic notes under this name appear in Bulletin 118, Alabama Agricultural Experiment Station, 1902.

White Brown-Hull.—Described in Bulletin 26, Georgia Experiment Station, 1894, as follows:

> Recumbent; small leaf and stalk, but dark green and vigorous; blossom—wings white, vexillum purple; form, kidney; pod, medium, dark brown or black; pea, medium, white; medium early; very heavy producer of both vines and peas.

Descriptive and agronomic notes appear in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

White Crowder.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 184), as follows:

> Recumbent; small, light-green leaf and stalk; trails at ends of vines; blossom—wings white, vexillum purple; form, crowder; pod, medium, yellow; pea, large, white, and very ugly, but of excellent quality—richer than Sugar Crowder and almost as sweet; yield of peas, however, light, and of vines, very light; late.

The name was early published in the American Agriculturist, 1876. (See citation on page 36.) It was still earlier published by Romans in his Natural History of East and West Florida, 1775. Descriptive and agronomic notes appear in Bulletin 34, Texas Agricultural Experiment Station, 1895; in Buleltin 40, Mississippi Agricultural Experiment Station, 1896; in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; and in Report, Kansas State Board of Agriculture, 1900 (p. 504).

White Era.—Name published with agronomic notes in Bulletin 74, Oklahoma Agricultural Experiment Station, 1907. According to Prof. L. A. Moorhouse, the variety was the New Era and the published name apparently due to an error.

White Florida.—Descriptive and agronomic notes of this name appear in Bulletin 46, Delaware College Agricultural Experiment Station, 1900.

White Giant.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 184), as follows:

> Recumbent; does not trail at ends of vines; short stalk; leaf medium in size and medium green in tint; blossom—wings white, vexillum purple; form, kidney; pod, large and long, yellow; pea, very large, white, wrinkled; very early; yield in vines, very light; in peas, light.

Under the same name agronomic notes appear in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900; and in Bulletins 118 and 120, Alabama Agricultural Experiment Station, 1902. See also 17366 and 29299.

White Grayeye.—A variety is advertised under this name in the 1907 catalogue of the Amzi Godden Seed Co., Birmingham, Ala.

White Lady.—This name with descriptive and agronomic notes is mentioned in Annual Report, Arkansas Agricultural Experiment Station, 1890. Apparently the same as Lady.

White Prolific.—Variety with black-eyed white seeds concerning which descriptive and agronomic notes are published in bulletins of the Louisiana Experiment Station, Nos. 22 and 27 (1889), and (ser. 2) Nos. 8 (1891), 16 (1892), and 17 (1892), and in Annual Report, Kansas Agricultural Experiment Station, 1888 (p. 63).

White Sugar.—This name appears in Bulletin 19 (ser. 2), Louisiana Experiment Station, 1892 (p. 541). Said to be a white pea of excellent table qualities but of no value as a forage plant.

White Table.—See citation from the American Agriculturist on page 36. Agronomic notes are also published in Bulletin 11, Minnesota Agricultural Experiment Station, 1890; and the name appears in Bulletin 98, Kentucky Agricultural Experiment Station, 1902 (p. 46).

Whittle.—Same as Taylor. According to Mr. F. I. Meacham, Statesville, N. C., this variety is there generally known as the "Whitley," instead of Whittle. The latter name is applied to it, according to Dr. B. W. Kilgore, by a man who grows it near Raleigh, N. C.

Wight Black Crowder.—See 17372.

Wild Goose.—A name published in Bulletin 77, Arkansas Agricultural Experiment Station, 1903 (p. 31).

Williams.—Under this name descriptive and agronomic notes appear in Bulletin 40, Mississippi Agricultural Experiment Station, 1896; and in "The Cowpea," published by the North Carolina State Horticultural Society. Probably the same as Williams Hybrid.

Williams Hybrid.—Described in Bulletin 26, Georgia Experiment Station, 1894 (p. 184), as follows:

> Trailer; very flat and close to ground in habit; small leaf and stem, but vigorous, though light green; pure white blossom; form, crowder; pod, medium, yellow; pea, medium, light-brown mottles on white ground; late; yield of vines, light; of peas, heavy.

Descriptive and agronomic notes also appear in Bulletin 46, Delaware College Agricultural Experiment Station, 1900; in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900; and in Bulletin 40, Mississippi Agricultural Experiment Station, 1896.

Wonder.—This name appears without description in Bulletin 57, New Hampshire Agricultural Experiment Station, 1898; and in Bulletin 199, Michigan Agricultural Experiment Station, 1902. Perhaps an abbreviation of Wonderful.

Wonderful.—Same as Unknown. See 13468 and 27545.

Woods Wonderful.--This name appears in Bulletin 146, North Carolina Agricultural Experiment Station, 1897 (p. 251). Apparently the name of the seedsman from whom the variety was obtained was prefixed.

Yeatman.—See citation from the Farmers' Register on page 35.

Yard Long.—One of the common names given to the asparagus bean.

Yellow Cow.—See sitation from the American Agriculturist on page 36.

Yellow Crowder.—Agronomic notes under this name appear in Bulletin 11, Minnesota Agricultural Experiment Station, 1890; in Bulletin 118, Alabama Agricultural Experiment Station, 1902; and in Report, Kansas State Board of Agriculture, 1900 (p. 504). The name was still earlier referred to in the American Agriculturist. See citation on page 36.

Yellow-Eye.—This name is commonly used as a synonym of Browneye. Descriptive and agronomic notes under this name appear in the Annual Report, Arkansas Agricultural Experiment Station, 1890, (p. 131); and agronomic notes in Report, Kansas State Board of Agriculture, 1900 (p. 504). The name also appears in catalogues of various seedsmen.

Yellow Pod.—This name appears in the 1896 catalogue of the N. L. Willet Seed Co., Augusta, Ga.

Yellow Prolific.—This name is published in Bulletin 61, Cornell University Agricultural Experiment Station, 1893 (p. 335).

Yellow Sugar.—Perhaps the same as Yellow Sugar Crowder. The name appears in Bulletin 160, Kansas Agricultural Experiment Station, 1909.

Yellow Sugar Crowder.—Agronomic notes under this name appear in Bulletin 118, Alabama Agricultural Experiment Station, 1902; in Bulletin 81, Delaware College Agricultural Experiment Station, 1908; and in Bulletin of the North Carolina Department of Agriculture, 1910 (vol. 31, no. 6).

Yohorn.—See citation from the Farmers' Register on page 35.

SYNOPSIS OF VARIETIES BY SEED COLORS.

The following brief synopsis will indicate the relative abundance of varieties in each seed color and aid in their identification. They may be classified into 12 groups by seed color, namely, white, yellowish, buff, pink, maroon, violet, smoky gray, brown, black, marbled, speckled, and marbled-speckled. Where the whole seed is not uniformly colored, the ground color is nearly always white, and the two-colored seeds may be eyed, blotched, or whitened, the last including those which are white only at the chalazal end. Cowpeas, but not catjangs and asparagus beans, may also be grouped into crowders and noncrowders.

The number of varieties is very large and their differences relatively small. The identification of any particular variety is, therefore, often a difficult matter, in many cases determinable only by comparative cultures. Furthermore, artificial hybrids are not difficult to obtain, and in some places natural hybrids are abundant. On these accounts no key to the varieties has been attempted. The descriptions will indicate the range of characters that occur in the varieties that have been brought together. From the best of these varieties numerous hybrids, involving in some cases new color combinations in the seeds, have been made by Mr. G. W. Oliver.

White-seeded varieties.—In this group the entire seed is white except the sides of the hilum and sometimes the iris. Five varieties are described as having white seeds, namely, Lady (17359), Cream (17693), 21813, Rice (29300), and 29308.

It is probable that the number of varieties is considerably greater, especially as 17359, 29300, and the variety called Conch in Florida all have similar seeds. They are valued principally for table use. No pure white-seeded asparagus beans or catjangs are known to occur.

Yellowish-seeded varieties.—Four varieties are here included, namely, Old Man 17354, 17354A, differing only in having a speckled eye, Yellow Sugar Crowder 17394 and 17422, a hybrid with the last mentioned as one parent. None are particularly desirable, except, perhaps, for table use. All are cowpeas.

Buff-seeded varieties.—Buff is the commonest seed color in cowpeas and catjangs, and is nearly as common in asparagus beans. Indeed, the great number and close similarity of the varieties make them difficult even to distinguish, aside from describing them.

Buff crowder cowpeas include Michigan Favorite 13472, Brown Crowder 17370, Mountain Crowder 29288 and 22053. Among other buff cowpeas are Iron 8418, Unknown 13468, Unknown 27545, Clay 17340, Warren's New Hybrid 17345, Melear 17383, Sixty-Day 17386, Powell's Early Prolific 17392, Purple-Podded Clay 18519A, Clay

Self-Seeding 22724, Wild Louisiana 17405, 21296A, 21509A, 21538, 22054, 22723, 22960, 23524, 23721, 24186, 24341D, 24566B, 25965, 25965B, 26302, 27199, 27503, 27586, 29282, 29287, 29301, and 29306. The varieties with buff-eyed seeds are also numerous, and include Browneye Crowder 17348 and many varieties that go as "Browneye," among them 16167, 17341, 17390, 17855, 21539C, 22408, 22760, 24192, 23307D, 24566, 25016A, 25147, Townsend 26844, and 25857. Several varieties have buff-and-white blotched seeds, including Southdown 17339, 21296B, 22728, and 29281. One variety, 21816, has seeds all buff but the chalazal end.

Buff catjangs are quite as numerous in varieties as buff cowpeas and include 8687, 11075, 17377, 21292, 21293, 21294, 21535A, 21602, 21934, 25714, 26580, 29271, and 29279. Buff-eyed catjangs are represented by 17376, 21295, 21296, 21535, 21565A, 22758, 26362, and 29272. Two varieties, 21535B and 21295D, have buff-blotched seeds.

In asparagus beans buff-colored seeds occur in 21559, 21559C, 21559D, 21569B, 22747B, and 27887.

Pink-seeded varieties.—Included under this group is a range of colors from vinaceous to brick-red. When the peas are aged these colors darken so that they are very difficult to distinguish from maroon. This is a common color in catjangs and asparagus beans as well as cowpeas. Cowpeas with the seeds wholly pink are 17328, 17405D, 17405G, 20980B, 21509, 21561, 22635, 25146, 29278, 29290, and 29283, and pink with the chalazal end white 17856, 23307A, 24186A, and 29303.

Pink asparagus beans include 11091, 20005, 21558, 22648A, 22902, 22935, 23214, and 25148. No. 25149 has the seeds white blotched with pink and 23328 has only the chalazal end white.

Catjang 21293B has its seeds pink-and-white blotched, and the following have the seeds wholly pink: 17380, 21293A, 21296A, 21563, 21564, 21565, 21603, 21792, 22888, 25144, and 29275.

Maroon-seeded varieties.—Maroon color occurs in cowpeas, not occurring, however, in catjangs or asparagus beans, though in both these there are colors closely approximating maroon. American cowpeas with kidney-shaped maroon seeds are commonly called Red Ripper, but there are at least eight varieties with these characteristics. Seeds with this color include Red Ripper 17350, Red Crowder 17361, 17405E, 17420A, 21539A, 22722, 22959, 24341B, 24919, Early Red 25088, 25145, 25512C, 26403, Red Yellowhull 29286, 29289, and 29307. Among maroon-eyed varieties are 21793 and 29293, and among maroon-blotched 18617, 21539, 21539B, 22887, 22903, 23307B, 29297, and 29298.

Violet-seeded varieties.—Violet as here used is undoubtedly only diluted black, or more accurately the black of cowpeas is really intense violet, as may be seen in extracted solutions of the color as well as in immature seeds. Seven cowpea varieties have their seeds wholly or more or less clouded with violet, namely 21006, 22929, 22930, 24341C, 25965D, and 29277. All of these except the first are from South Africa, and all but the last very vigorous, late, procumbent sorts. One variety 21006A has its seeds violet and finely speckled with blue. 20980C has violet-eyed seeds and 20980D has violet-blotched seeds. All are cowpeas.

Smoky-gray seeded varieties.—Only two scarcely distinguishable cowpea varieties have seed coloration described as smoky gray, Watson 17425 and Sport 17427, neither of much value. This color appears in hybrids of Black and Blackeye. The same color has been observed in catjang seeds, but they were not viable.

Brown-seeded varieties.—Four varieties have their seeds burnt umber in color, namely, Brown Coffee 17404, 17398A, 25512B, and 29284. The first three are closely similar and of moderate value. Asparagus bean 22648 has seeds of walnut-brown color.

Black-seeded varieties.—Black-seeded varieties are but little less numerous than buff-seeded. This color also occurs in all three species. Among cowpeas the following black-seeded ones are crowders: Black Crowder 22052, Wight Black Crowder 17372 and 29285. Noncrowders include Chinese Black 16796, Early Black 17336, 17405F, 20980A, 21508, 21511, 21817, 22718B, 26399, 27549, 29292, and 29302.

Black-eyed varieties are also abundant and as a rule they are very similar to each other. Among them are 16167A, 17329, 17335, 17346, 17366, Blackeyed Lady 17420, 20980, 21297, 21510, 21537, 21815, 22050, 22382, 24190, 24191, 24566A, 25016, 27504, 27548, 29276, and 29299. Black-eyed varieties have always been grown as a table vegetable since ancient times, which accounts to some extent for the numerous very similar varieties. With black-blotched seeds are Holstein 17327, 21297A, 24188, 24566C, 29280, and 29309.

Black catjangs are not numerous, only three varieties, 21295C, 21297E, and 27502, having been obtained. Two others, 21293D and 21295F, have black-blotched seeds.

Asparagus beans have black seeds in four varieties, 6311, 6567, 17332, and 20006. One variety grown only a single season, 01422A, has black-blotched seeds.

Marbled-seeded varieties.—The marbled type of coloration, represented by the well known Whippoorwill, occurs in catjangs and asparagus beans as well as in cowpeas. Among the cowpeas in this group with the seed wholly marbled are Whippoorwill 17349, Whippoorwill Crowder 17371, Red Whippoorwill 17374, Brabham 21599, Peerless 25314, Chinese Whippoorwill 17330, 17849, 21085, 23307, and 24185, and unnamed sorts 21814, 25369, 25512D, and 25786A; with only the eye marbled, Guernsey 17408 and 29304; with all the seed but the chalazal end marbled 17849A and 23307C, the last with the ground color red.

Nearly all of the Whippoorwill on the market is true to type, but the seed can scarcely be distinguished from the later Peerless or from the very late 25369 and 25512D.

Catjangs with marbled seeds are 11076, 21295B, 21295G, 21603B, 29273, and 29274.

Asparagus beans wholly marbled include 21562, 21569, 22746, and 22747, and with the chalazal end white, 22747D.

Speckled-seeded varieties.—The speckled type of coloration occurs in cowpeas and catjangs, but is not known in asparagus beans. It is most common in varieties from South Africa. Cowpeas with the whole seed speckled include New Era 21088, Taylor 17342, Speckled Crowder 22051, 21006A, 22931, 22933, 23720, 24341A, 25785, 25786, 25787, 25965A, and 29296; with only the eye speckled Ayrshire 17409, 17354A, and 22727; with the speckled color in blotches 17363, 22715, and 29293.

Catjangs with speckled seeds are 11076A and 21297D.

Marbled and speckled seeded varieties.—This type of coloration occurs fixed in two cowpeas, Groit 17334, a cross between Whippoorwill and New Era, and 29295, a cross between Whippoorwill and Taylor Crowder; also in catjang 11076B.

It has also been found heterozygote in three other catjangs, in each case the progeny including plants with marbled and with speckled seeds.

CATALOGUE AND DESCRIPTIONS OF VARIETIES.

The following is a complete list of the varieties of cowpeas, catjangs, and asparagus beans secured through the Office of Seed and Plant Introduction, arranged chronologically according to their S. P. I. numbers. For a good many of the early numbers no critical varietal notes are available, so their identity is not certain. In many cases other varieties were found mixed in the original seed or in the field plats. Such are indicated by the S. P. I. number with a letter added, thus, 17396A. Many additional lots were given temporary numbers. All such begin with 0, thus 0424. The catjang and asparagus beans are named in each case. All others are cowpeas.

The descriptions are based mainly on the cultures at Arlington Experimental Farm, in 1909 and 1910, though most of the varieties have been grown from three to five years. In the former year they were planted June 17 and 18, in the latter June 20 and 21.

The year 1909 was an exceptionally dry year, very little rain falling from the time the varieties were planted until September 23; consequently the plants were below normal size, though they showed no other suffering from the drought. The season of 1910 was more favorable, though drier than normal. The varieties generally grew about one-fourth larger than in 1909.

In 1910 about 450 lots of seed from American sources were grown. Some few of these proved to be very distinct varieties, and the more interesting are mentioned or described. Others which differed only in minor points are referred to in only a general way.

2080. From France, 1899. Seeds maroon. An original seed sample shows a mixture of three varieties, two of them cowpeas and one an asparagus bean.

Very strong grower; leaves large, smooth, and shiny; pods not very numerous, 6 to 8 inches long.—*W. R. Beattie, Arlington Farm, 1900.*

2081. "Tonquin bean." From France, 1899. Origina seeds oblong, small, 4 by 5 to 6 mm.; white with a small, indistinct, grayish eye; not matched by any later number.

Very dwarf; leaves very small; pods numerous and ripening very early.—*W. R. Beattie, Arlington Farm, 1900.*

2082. *Blackeyed Bird's-Foot.* From France, 1899. Original seeds subreniform, smooth, 5 by 7 mm.; white with a small black eye. About half of the seeds have a larger maroon eye.

Very strong grower; leaves large; pods very numerous, 5 to 8 inches long.—*W. R. Beattie, Arlington Farm, 1900.*

2932. From Panama, 1899, under the name "Colorado." (Pale brown.) Original seeds buff, half crowder, 6 by 8 mm.

Has most vigorous growth of any, and continued green until killed by frost. No pods formed.—*W. R. Beattie, Arlington Farm, 1900.*

2934. From Panama, 1899, under the name "Morado" (brown). Original seeds maroon, rhomboid, 6 by 7 mm.

Very strong grower, trailing close to the ground. Leaves deep green, shiny; pods abundant, 6 to 9 inches long.—*W. R. Beattie, Arlington Farm, 1900.*

2940. Asparagus bean. From Panama, 1899. Original seeds maroon with chalazal end white, 6 by 8 to 9 mm. No cultural notes.

3610. From Smyrna, Asiatic Turkey, 1899. Original seeds plump, transversely wrinkled, 6 to 7 by 8 to 10 mm., white with a medium-sized maroon eye. About one-fourth of the seeds have black eyes, but are otherwise similar to the rest.

Good grower; leaves large; pods long and numerous; ripens late.—*W. R. Beattie, Arlington Farm, 1900.*

W. A. Orton[1] records notes of observations at Monetta, S. C., in 1901, as follows: "An early cowpea, which made a vigorous growth in the early part of the season, but was all killed by wilt before the end."

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[1] Orton, W. A., Bulletin 17, Bureau of Plant Industry, U. S. Dept. of Agriculture, 1902, p. 19.

3627. From Alashehr, Asiatic Turkey, 1899. Original seeds subreniform, much wrinkled, 5 by 7 mm.; white, with an olive or yellowish iris.

Moderate grower; very productive; pods 4 to 7 inches long and very well filled.—*W. R. Beattie, Arlington Farm, 1900.*

W. A. Orton[1] records the following note of observations at Monetta, S. C., in 1901: "An early variety of medium growth and quite prolific; quite subject to wilt."

3670. From Smyrna, Asiatic Turkey, 1899. Original seeds plump, wrinkled, subreniform, 5 to 6 by 7 to 8 mm., white, the iris olive yellow. A few seeds similar but with maroon eyes are intermixed.

Rather dwarf and stocky; leaves slightly wrinkled; pods very numerous, 4 to 6 inches long, well filled and ripen early.—*W. R. Beattie, Arlington Farm, 1900.*

W. A. Orton[1] records the following note of observations made at Monetta, S. C., in 1901: "An early sort of larger growth than the preceding (3627) and notably more resistant to the wilt disease, though not free from it."

3889. From Honolulu, 1899, originally from China. Seeds reddish, small, oblong, 4 by 5 mm. No varietal notes.

4144. From Naples, Italy, 1899. Seeds oblong, white with maroon eye, 8 by 6 mm.; identical with those mixed in 3670. No varietal notes.

4284. *Taylor.* From Virginia, 1900. See 17342.

4315. *Wonderful.* From North Carolina, 1900. See 17344.

4316. *Southern.* From North Carolina, 1900. Has marbled seeds and is apparently Whippoorwill.

4317. *Black.* From North Carolina, 1900. Seeds indistinguishable from 29292.

4377. From Naples, Italy, 1900. Seeds apparently buff, subreniform, 5 by 7 mm. No varietal notes.

4379. From Naples, Italy, 1900. Seeds buff, oblong, 5 by 7 mm. Perhaps the same as 4377.

4381. From Naples, Italy, 1900, under the name *Dolichos bahiensis*, of which no published description can be found. Seeds black, small, 4 by 5 mm.

4382. From Naples, Italy, 1900, under the name *Dolichos bicontortus*. Original seeds buff, subreniform, 5 by 7 mm. A few of other sorts intermixed. No varietal notes.

4973. Asparagus bean. From Yokohama, Japan, 1900, under the name "Jinroku sasage." Seeds apparently pink, reniform, 6 by 9 mm.

4974. Asparagus bean. From Yokohama, Japan, 1900, under the name of "Sanjak sasage." Seeds very similar to the preceding.

5042. *New Era.* From Georgia, 1900. See 21088.

5118. Asparagus bean. From Sinaloa, Mexico, 1900, originally from Asia. Seeds black, 5 by 9 to 10 mm. Insufficient varietal notes.

5222. Asparagus bean. From Sinaloa, Mexico, 1900. The same as 5118; the local name given as "Ankok."

5415. From Calcutta, India, 1900. Seeds pink, oblong, 6 by 8 mm. No varietal notes.

5416. From Calcutta, India, 1900. Seeds subreniform, wrinkled, 5 to 6 by 7 to 8 mm.; white, with a medium black eye. No varietal notes.

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[1] Orton, W. A., loc. cit.

6223. From Negros, Philippine Islands, 1901. Vernacular name "Balatong." Seeds marbled like Whippoorwill; rhomboid, 5 by 7 mm. No varietal notes.

6228. From Negros, Philippine Islands, 1901. Vernacular name "Lestones." Seeds buff, subreniform, 5 by 8 mm. No varietal notes.

6311. Asparagus bean. From Tokyo, Japan, April, 1901, under the name "Black Juroku sasage." Plants suberect, half bushy, the row mass 12 to 18 inches high and as broad; stems rather stout, little inclined to vine at the tips; trailing branches few or none; leaflets pale, rather narrow, conspicuously angled at the base, much affected by rust and by red leaf-spot; flowers pale violet purple; not prolific; pods pale or a little purplish, little inflated, 8 to 12 inches long, the first maturing in about 85 days; seeds reniform, dull black, 6 by 10 mm. This is the most upright growing of all the varieties of asparagus bean tested. The rather small pods and upright habit suggest that it may be of hybrid origin. According to Orton[1] it proved a prolific early variety at Monetta, S. C., 1901, but somewhat subject to wilt and injured by dry weather.

6327. From Tokyo, Japan, 1901, under name of "Kurakake." Original seeds oblong, 5 by 6 to 7 mm.; white, with black eye. Orton[1] records notes for Monetta, S. C., 1901, as follows: "Early and small, but fruiting fairly well; pea white with a black eye; badly injured by wilt and nematodes." W. R. Beattie (Arlington Farm, 1901) has the following observation regarding it: "A very dwarf variety with short pods, ripening early and very prolific."

6328. From Tokyo, Japan, 1901, under name of "Kintohi." Original seeds subglobose, maroon with the iris nearly black, 5 by 6 mm. Orton[1] records Monetta, S. C., 1901, notes as follows: Early; a small, prolific variety, with small red seeds; injured by wilt and dry weather. W. R. Beattie (Arlington Farm, 1901), records the following: More dwarf than 6327, but with longer pods. Early and prolific.

6413. From Pingyang, Chosen (Korea), 1901. Original seeds pink, 6 by 8 mm., sharply keeled. Not matched by any later number.

> A very small-growing variety which sets an enormous crop of pods, maturing early; pods 6 to 8 inches long.—*W. R. Beattie, Arlington Farm, 1901.*

6431. From Athens, Greece, 1901. See 17333.

6557. From Hankow, Hupeh, China, 1901. See 17328.

6563. From same source as preceding. See 17329.

6566. From same source as preceding. See 17330.

6567. Asparagus bean. From same source as preceding. Seeds of this variety are black, 6 by 10 mm., with longitudinally impressed striæ. The only field notes are from San Antonio, Tex., 1904, where it was planted March 23 and began to mature pods June 28. "It is a vigorous variety, but produced only a few pods."

6568. Asparagus bean. From same source as preceding. Seeds maroon, somewhat striate longitudinally, 5 to 6 by 10 mm. This seed failed to germinate.

8354. Asparagus bean. From Morioka, Japan, 1902. See 17332.

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[1] Orton, W. A., loc. cit.

8418. *Iron.* From Mr. T. S. Williams, Monetta, S. C., 1901. Half bushy, quite viny, vigorous; the row mass 24 to 28 inches high, 30 to 36 inches broad; trailing branches green, 4 to 5 feet long; leaflets large, dark, plane, immune to rust, very slightly subject to white leaf-spot, but sometimes attacked by mildew, held late; flowers violet-purple; moderately prolific; pods well filled, held medium high, straw colored or often purplish, usually rough, 6 to 8 inches long, the first maturing in 90 to 100 days; seeds rhomboid, cream buff to vinaceous buff, 4 to 6 mm. broad by 7 to 9 mm. long. According to Orton[1] the first authentic knowledge of the Iron cowpea was its discovery by Mr. T. S. Williams, who found it in Barnwell County, S. C., in 1888, and later called the attention of the Department of Agriculture to it. Seedsmen and others have modified the name into such forms as Ironclad, Iron Mountain, and Little Iron. Iron volunteers more readily than any other cowpea, being in fact the only variety that volunteers at Arlington in abundance. The attempt was made to increase this tendency by selecting seed from such volunteer plants, but with no apparent success. Where the seeds are plowed under in the fall a fair stand may result, but not if they are simply scattered on the surface. Selection in this variety has given no appreciable results. It has been grown under many numbers: 11370, 13466, 13462, 13464, 17367, 17391, 17395, 17396, 17397, 17419, 17423, 17430, 17431, 17433, 17434, 17435, 17436, 19777, 21832, 22055, 22391, 27544, and 27872. All but the last six are known to be the progeny of seed originally from Monetta, S. C. No. 22391 is from Manila, P. I., where it was received from Venezuela. It apparently differs in no particular from Iron. No. 0701, received from the Missouri Agricultural Experiment Station as Early Boolock, is apparently identical with Iron. Iron is especially valuable on account of its resistance to wilt and to root-knot. On this account it is largely grown where these diseases prevail, but its excellent qualities are such that it is grown over a much wider area also. Its moderate seed yield is its chief weakness.

8498. Progeny of 6311.

8499. Progeny of 6327.

8500. Progeny of 6328.

8501. Progeny of 6413.

8687. Catjang. From Surat, India, 1902. Vernacular name "Chowali," "Chola," or "Choli." Tall, very vigorous, suberect, very viny, the row mass 2 to 3 feet high and 4 feet broad; trailing branches many, 4 to 7 feet long; leaflets large, dark, not affected by rust, but somewhat subject to red leaf-spot; flowers violet purple; very late, not even blooming at Arlington Farm; pods grown in greenhouse and at Chico, Cal., straw colored, slender, torulose, thin, 4 inches long; seeds buff with a yellow to brown iris, about 3 by 5 mm., oblong. This variety has been grown at Arlington Farm for four seasons with similar results; at Chico, Cal., it has produced small crops of pods in about 140 days. The seeds retain their viability to a much greater degree than most vignas, some of the original seed still germinating over 90 per cent in 1908. This is one of the most vigorous of all the catjangs and fairly erect. It has been used in making numerous hybrids with the view of combining its good characters with those of the best cowpeas.

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[1] Orton, W. A., loc. cit.

11074. Asparagus bean. From Abyssinia, 1904. See 17492.

11075. Catjang. From Abyssinia, June, 1904. Procumbent, very viny, the row mass 12 to 18 inches high, 3 to 4 feet broad; trailing branches few, 5 to 6 feet long; leaves not affected by rust or leaf-spot; very late, no flowers forming in any of the three years in which it was grown; in greenhouse-grown specimens the flowers were pale violet; seeds buff, oblong, with truncate ends, 4 to 5 mm. long. This variety has very much the same habit as 11076, from the same source. It is too late and prostrate to be of much value.

11076. Catjang. From Abyssinia, June, 1904. Plants procumbent, vigorous, very viny, the row mass 18 to 24 inches high, 4 feet broad, rather dense; trailing branches many, 3 to 6 feet long, very viny, green; leaflets medium sized, pale, free from rust and leaf-spot; not even blooming at Arlington Farm in 1909 in 132 days, nor did it bloom in 1905, 1907, or 1908. In greenhouse-grown specimens the flowers proved to be violet purple in color; pods small, erect, 3 to 4½ inches long; seeds buff, more or less heavily marbled with brown, the brown sometimes predominating, oblong, mostly 3 by 4 mm. An interesting variety of catjang, but apparently of no value under American conditions. (See Pl. II.)

11076A. Catjang. Identical in every way with 11076 excepting as to seeds, which are buff, thickly speckled with blue, as in New Era, but of the same size and shape as those of 11076. In some cases the seeds had irregular splotches of black, and in rare cases one entire side of the seed was black. Such proved to be heterozygote.

11076B. Catjang. Exactly like 11076 in all respects excepting as to seed, these being a combination of the markings of 11076 and 11076A, between which two it is without doubt a hybrid. The marking is a combination of the marbling of 11076 and the speckling of 11076A, and sometimes with the irregular black splotches which also occur in 11076A. Such seeds proved to be heterozygote. When growing in the field at Arlington Farm these three varieties can not be distinguished. (See Pl. II.)

11090. From Abyssinia, June, 1904. No seeds or data concerning this number are preserved.

11091. Asparagus bean. From Abyssinia, June, 1904. Plant procumbent, very viny, the row mass 12 inches high and 24 to 30 inches broad; trailing branches 2 to 6 feet long; leaves considerably affected by rust; flowers violet-purple; prolific; pods pale, 8 to 12 inches long, moderately inflated, the first maturing in about 85 days; seeds reddish buff, 5 by 9 mm. An undesirable variety owing to rust susceptibility. No. 17493 is the progeny of this number.

11236. *Warren.* From the Arkansas Agricultural Experiment Station, 1904. There are no critical varietal notes on this number, but it is probably the same as 17352. Agronomic notes from various cooperators indicate that it is an early productive sort, semierect with trailing branches 3 to 4 feet long.

11344. *Michigan Favorite.* From Mr. E. E. Evans, West Branch, Mich., July, 1904. See 13472.

11370. *Iron.* Progeny of 8418.

13454. *Early Black.* From J. M. McCullough's Sons, Cincinnati, Ohio, 1902. See 17343.

13455. *Large Blackeye.* From Alabama Agricultural Experiment Station, March, 1902. See 17355.

13456. *Extra Early Blackeye.* From Arkansas Agricultural Experiment Station, March, 1902. See 17335.

13457. *California Blackeye.* From Arkansas Agricultural Experiment Station, March, 1902. See 17338.

13458. *Clay.* From South Carolina Agricultural Experiment Station, March, 1902. See 17340.

13459. From T. W. Wood & Sons, Richmond, Va., April, 1904, as *Clay.* The available notes on this lot are brief. The seeds seem to be identical with Iron.

13460. *Iron.* From South Carolina, 1902. See 17430.

13461. *Iron.* Progeny of 11370, Dwight, Nebr., 1904.

13462. *Iron.* Progeny of 11370, Cedartown, Ga., 1904.

13463. *Iron.* Progeny of 11370, Willshire, Ohio, 1904.

13464. *Iron.* Progeny of 11370, Kentucky and Illinois, 1904.

13465. *Iron.* Progeny of 11370, Wakonda, S. Dak.

13466. *Iron.* Progeny of 11370, Bridgeton, N. J.

13467. *Iron.* Progeny of 11370, Kearney, Kans., 1904.

The foregoing eight lots were grown in comparison at Arlington Farm in 1905, but no difference could be detected.

13468. From Texas Seed and Floral Co., Dallas, Tex., March, 1902, as Wonderful. Different lots of the progeny of this number have been numbered 17344, 17353, and 17356. Very vigorous, viny, the row mass 2 feet high, 2½ feet broad; trailing branches medium in number, 3 to 5 feet long, moderately coarse, green; leaflets large, dark, with undulated surface, immune to rust and but little affected by leaf-spot, held late; flowers violet-purple; moderately prolific; pods well filled, held medium high, straw colored, 6 to 8 inches long, the first maturing in about 90 days; seeds vinaceous buff, subreniform, 5 by 8 mm. This variety resembles 17340 closely, but is later and larger. Owing to its long culture in the Arlington Farm trials it has come to be looked upon as authentic Wonderful or Unknown, but this apparently must remain a matter of doubt. For a discussion relative to this problem see page 17. See also 27545.

13469. From T. W. Wood & Sons, Richmond, Va., as Wonderful. No varietal notes on this lot. The seeds, which are buff, rhomboid, 7 by 9 to 10 mm., are not distinguishable from *Iron.*

13470. *Warren's Extra Early.* From Arkansas Agricultural Experiment Station, March, 1902, but originally from William Henry Maule, Philadelphia, Pa. See 17352.

13471. *Warren's New Hybrid.* From Louisiana Experiment Station, March, 1902. See 17345.

13472. *Michigan Favorite.* From Mr. E. E. Evans, West Branch, Mich., May, 1904. Moderately vigorous, viny, the row mass 14 inches high, 2 feet broad; branches medium in number, coarse, 3 to 5 feet long, prostrate or nearly so; leaflets large, dark, shed early, immune to rust, but much subject to both red and white leaf-spot; flowers violet-purple; prolific; pods well filled, held low, straw colored or more or less purplish tinged, 5 to 8 inches long, turgid, the first maturing in about 85 days; seeds buff-pink, crowder form, strongly keeled, about 7 by 8 mm. This variety has been grown for six seasons at Arlington Farm, as well as at Chillicothe, Tex., Audubon Park, La., and elsewhere. It is not a first-rate variety, though on account of its earliness considerably grown in Illinois, Indiana, and Michigan. Like most crowder cowpeas the pods are close to the ground. This variety was first extensively introduced by Mr. E. E. Evans in 1901. He writes concerning its history:

> I have diligently searched for many years in an attempt to fix the origin of this variety, but so far without result. It has been grown in this State (Michigan) about 20 years, but it was grown in Illinois prior to this. I first obtained my seed from a man named Wood, or Woods, near Kalamazoo. This man had named it Michigan Favorite.

Other numbers of this variety, all tracing to the same source, are: 11344, 13473, 16812, 17402, and 17406. It has been widely disseminated and tested in all parts of the cowpea region. Northward it is held in considerable esteem, and southward is often grown for table use, especially in Texas.

13473. *Michigan Favorite.* From same source as preceding.

13474. *Michigan Favorite.* Progeny of 11344, grown at Wakonda, S. Dak., by Mr. Han Abild. Received March, 1905.

13475. *Whippoorwill.* From T. W. Wood & Sons, Richmond, Va., March, 1902. See 17349.

13476. *Taylor.* From Alabama Agricultural Experiment Station, March, 1902. See 17342.

13477. *New Era.* From T. W. Wood & Sons, Richmond, Va., April, 1904. See 21088.

14499. From T. W. Wood & Sons, Richmond, Va., June, 1905, as Wonderful. No available data on this lot.

16166. From Italian exhibit, Louisiana Purchase Exposition, 1904, labeled "Cosenza." Seeds plump, rhomboid, 6 by 10 mm., transversely wrinkled, white with a medium black eye, indistinguishable from 27548. They would not germinate in 1906.

16167. From Reggio, Calabria, through the Italian exhibit, Louisiana Purchase Exposition, 1904. Low, half bushy, moderately vigorous, the row mass 14 inches high, 2 feet broad; trailing branches rather few, about 4 feet long; leaflets of medium size and color, immune to rust, much affected by red leaf-spot, shed early; flowers white; not prolific; pods fairly well filled, moderately high, straw colored, 5 to 10 inches long, the first maturing in about 80 days; seeds white with a small brownish eye, smooth or transversely wrinkled, subreniform, about 6 by 10 mm.; iris dark brown. This is one of the earliest varieties of browneye included in the trials. In the three seasons grown, there has been a decided change in the color of the seed. In the original seeds the eye was very large, dark reddish brown, perhaps due to age, the edge uneven and breaking into fine spots on the chalazal end. The progeny in 1908 showed a few seeds of this character, but most of them had only a small tan-brown eye, which was sharply delimited; in about one-tenth of the seeds the eye was black (16167A). In the crop of 1909 the eye is brown in some seeds, black in others, and in a few black with a brown margin (these probably heterozygote). In 1910 both the brown-eyed and black-eyed kinds bred true.

16167A. Suberect, half bushy, moderately vigorous, the row mass 14 to 16 inches high, 18 inches broad; leaves medium sized, free from rust, much affected by white leaf-spot and somewhat by red leaf-spot; flowers pale violet purple; moderately prolific; pods medium well filled, held rather low, straw colored, 6 to 8½ inches long, the first maturing in 85 days; seeds subreniform, 6 by 8 to 9 mm., white with a medium-sized black eye. This variety is very similar to Early Blackeye 17335, but not quite identical.

16168. Same source as preceding, labeled "Caserta." Original seeds identical with original seeds of 16167. None of them were viable in 1906.

16229. From Mr. Herman Ockels, Bristol, Conn., 1905. Identical with New Era 21088.

16794. Asparagus bean. From Hangchow, Chekiang, China, December, 1905. Original seeds reddish, reniform, 5 to 6 by 10 mm. No cultural notes.

16795. From same source as 16794. This lot consists of a maroon adsuki bean with a few small maroon cowpeas intermixed. There are no cultural notes on the latter.

16796. *Chinese Black.* From same source as 16794. Half bushy, vining but little, the row forming a mass 18 to 24 inches high, 24 to 30 inches broad; trailing branches 2 to 4 feet long; leaflets shed early, much affected by rust; flowers violet purple; fairly prolific; pods held rather low, not well filled, 5 to 8 inches long, straw colored, the first maturing in 70 to 75 days; seeds black, variable, 5 to 6 by 6 to 9 mm. An undesirable variety on account of its susceptibility to rust. The same variety has been received as 22647, also from Hangchow, and 24189, from Soochow, Kiangsu, China. Excepting for susceptibility to rust, these numbers hardly differ from Early Black 17336.

16812. *Michigan Favorite.* From Ogemaw Seed Co., West Branch, Mich., 1905. See 13472.

17327. *Holstein.* From the Arkansas Agricultural Experiment Station, through Prof. C. L. Newman, 1903, a cross between Black and Blackeye. Rather low, half bushy, viny, vigorous, the row mass 16 inches high, 2 feet broad; trailing branches coarse, medium in number, green, 2 to 4 feet long; leaflets dark, medium sized, held fairly late, immune to rust, somewhat affected by both red and white leaf-spots; flowers pale violet purple; quite prolific; pods well filled, held medium low, straw colored, often purplish tinged, large, 6 to 8 inches long, the first maturing in about 100 days; seeds black-and-white blotched, oblong rhomboid, 7 by 9 mm.; grown six seasons; not a first-class variety. It has also been tested at Chillicothe, Tex.; Stillwater, Okla.; and Audubon Park, La., at none of which places does it show particular merit. No. 22720, a cross of Blackeye and Black, from the Arkansas Agricultural Experiment Station and grown two seasons, is indistinguishable from this. No. 17425A, out of Watson 17425, from the Arkansas Agricultural Experiment Station in 1903, grown three seasons, is precisely identical. No 22725, from the South Carolina Agricultural Experiment Station, through Prof. C. L. Newman, grown two seasons, is also identical. No. 17410, a cross between Black and Blackeye, 17417, a cross between Black and Extra Early Blackeye, and 17418, a cross between Early Blackeye and Black, are from the same source as 17327, and not distinguishable from it. No. 0605, from the same source, is very similar. Besides the foregoing, a number of lots of similar seeds have been obtained from Mr. J. W. Trinkle, Madison, Ind., on whose place they originated, probably as natural hybrids of Black and Blackeye. Of these lots, 0912, 0913, 0914 are indistinguishable from 17327, and 0420 matures in the same time but is somewhat inferior. Nos. 0615 and 0616 are closely similar in habit, but a little larger and mature about five days later. Nos. 0419, 0421, 0612, 0613, 0617, and 0917 are taller and more erect, 0918 being the best of the lot. No. 0614 is quite like 0917, but 10 days later. The last is the best variety we have grown with this coloration of seed, and it is perhaps worthy of general culture.

17328. *Chinese Red.* The progeny of 6557, from Hankow, Hupeh, China. Half bushy, viny, the row mass 24 inches high and as broad; trailing branches few, 2 to 3 feet long; leaflets dark, medium sized, shed early, very much affected by rust, a little subject to red leaf-spot; flowers violet purple; not prolific; pods poorly filled, held medium high, straw colored, 5 to 6 inches long, the first maturing in 80 days; seeds vinaceous rufous, rhomboid, 5 by 7 mm. This variety has been grown six years at Arlington Farm. The above notes are for 1909. In 1910 when rust was absent it proved to be the best cowpea with pinkish seeds, being prolific and of excellent bushy habit. No. 22635, from Sheklung, Kwangtung, China, is nearly or quite identical.

17329. The progeny of No. 6563, from Hankow, Hupeh, China. Half bushy, vigorous, the row mass 16 inches high, 2½ feet broad; trailing branches many, 3 to 5 feet long; leaflets dark, medium sized, immune to rust, considerably affected by leaf-spot, held medium late; flowers white; prolific; pods well filled, held medium high, straw colored or somewhat tinged with purple, 6 to 10 inches long, the first maturing in about 80 days; seeds subreniform, white with a narrow black eye, about 6 by 8 mm. Very similar to Early Blackeye 17335, except as to seed; one of the best blackeyes. Grown for six seasons and at various experiment stations.

17330. *Chinese Whippoorwill.* The progeny of 6566, from Hankow, Hupeh, China, 1901. Tall, the row mass 30 inches high, 3 feet broad, viny, moderately vigorous, tips of stems viny and continuing to grow late; trailing branches medium in number, 3 to 4 feet long; leaves medium in size and color, much affected by rust; flowers violet purple; fairly prolific; pods well filled, held high, straw colored, 5 to 6 inches long, the first maturing in about 90 days; seeds subreniform to rhomboid, about 4 by 6 mm., brown marbled on buff. A variety of good habit, but too subject to rust to be first class. At Chillicothe, Tex., and Amarillo, Tex., this variety was among the best, being decidedly drought resistant. The pods, however, shatter rather easily.

17331. *Downs Early Ripener.* From Mr. L. W. Downs, Watkinsville, Ga., November, 1902. This is identical with New Era. See 21088.

17332. Asparagus bean. Progeny of 8354, from Morioka, Japan. Plants procumbent, very viny, forming a mass 12 inches high, 2 to 3 feet broad; stems medium coarse with few trailing branches, these 4 to 7 feet broad; leaflets dark, much affected with rust, and a little with leaf-spot; flowers pale violet purple; moderately prolific; pods much inflated, green, not becoming pale, 16 to 30 inches long, the first maturing in about 65 days; seeds dull black, 4 to 5 by 8 to 10 mm. Quite distinct from 20006 and 6311, which also have black seeds, but unpromising.

17333. *Grecian.* The progeny of 6431, from Athens, Greece. The original seed of this is exactly like the original seed of 16167, and the 1909 progeny of seeds is also like that of 16167. The plants are identical in habit and earliness of maturity.

17333B. Buff seeds mixed in 6431. Somewhat procumbent, moderately vigorous, viny, the row mass 14 inches high, 2 feet broad; trailing branches 3 to 4 feet long; leaflets medium sized, immune to rust, but considerably subject to red leaf-spot; flowers pale violet purple; prolific; pods straw colored, well filled, held medium high, 5 inches long, the first maturing in about 85 days; seeds pinkish buff, subreniform, about 6 by 7 mm. A prolific, medium-early variety, but not of much value.

17334. *Groit.* From the Iowa Seed Co., Des Moines, Iowa, March, 1903. Plants suberect, half bushy, vigorous, the row mass 24 to 26 inches high, 3 feet broad; trailing branches rather few, 2 to 4 feet long; leaflets medium in size and color, immune to rust and considerably affected by white leaf-spot; flowers violet purple; very prolific; pods well filed, held high, very pale straw color, almost straight, 7 to 9 inches long, the first maturing in about 80 days; seeds rhomboid, about 6 by 8 mm., with a ground color of buff, marbled with brown and thickly sprinkled with minute blue specks. Identical with the above and from the same source is 17347; also 17403 from T. W. Wood & Sons, Richmond, Va.; 17411, "a selection from New Era" from the Arkansas Agricultural Experiment Station, through Prof. C. L. Newman in 1904; 25078 and 26497 from Coulterville, Ill.; and 0720 from Mr. J. C. Little, Louisville, Ga. The Groit cowpea is unquestionably a hybrid between New Era and Whippoorwill; indeed this hybrid has been made artificially by Mr. G. W. Oliver, who produced a plant with the seeds exactly like Groit. It is probable that the Groit originated spontaneously, the first authentic record that we have of it being the seed obtained in 1903 from the Iowa Seed Co. as New Era. This lot is said to have been grown by Mr. J. C. Little, of Louisville, Ga., who did not at the time notice that it was distinct from New Era. Groit has been much confused with New Era, all of the above lots having been obtained under the latter name. It also appears that all the records concerning New Era, published by the Kansas Agricultural Experiment Station, actually refer to Groit and it is probable, in the light of our present knowledge, that most of the New Era grown in the States of Illinois and Missouri is also really the Groit. Groit is a most excellent cowpea, being in a general way from 20 to 25 per cent superior to New Era, which variety it is likely largely to replace. The Groit has been extensively tested during the past few years, and over practically the whole of the cowpea belt maintains its superiority in comparison with New Era. The origin of the name Groit is unknown; it was first published and described in Bulletin 73 of the Missouri Agricultural Experiment Station in 1906, but spelled "Groite." See also Bulletin No. 81, Delaware College Agricultural Experiment Station, and Yearbook, U. S. Department of Agriculture, for 1908 (p. 256).

17335. *Early Blackeye.* The progeny of 13456, from the Arkansas Agricultural Experiment Station, 1903, as Extra Early Blackeye. Low, half bushy, very viny, vigorous, the row mass 18 inches high, 2 feet broad; trailing branches many, 4 to 5 feet long; leaflets large, dark, immune to rust, but somewhat affected by both red and white leaf-spot; flowers nearly white; prolific; pods well filled, held rather low, straw colored, 6 to 10 inches long, the first maturing in about 85 to 90 days; seeds oblong, about 6 by 8 mm., white with a medium-sized black eye. Grown six seasons. The same thing is represented in California Blackeye 17338, from the Arkansas Agricultural Experiment Station, 1903, and several lots from miscellaneous American sources.

17336. *Early Black* or *Congo.* From J. M. McCullough's Sons, Cincinnati, Ohio., March, 1902. Half bushy, forming rows 18 to 20 inches high, 2 to 2½ feet broad; trailing branches rather few, 2 to 4 feet long; leaflets held late, immune to rust, but quite subject to red leaf-spot; flowers violet purple; prolific; pods borne rather low, purplish when immature, becoming straw colored or purplish when ripe, 6 to 8 inches long, the first maturing in about 60 days; seeds black, 7 by 9 mm. This variety differs from Black 29292 in being 10 days earlier and in having larger seeds. It is identified with little doubt with "Congo," as described by Starnes. See page 51. Early Black is not a desirable variety for the same reasons given under Black—it has too low a habit and too great a tendency to vine. Nos. 13454, 17337, and 17343, from the same source as 17336, are identical, all received as Early Black. Other lots that are identical or virtually so are Black Bunch, 0589, from the Arkansas Agricultural Experiment Station, 1903; 0571, from Milford, Del., 1903; Hammond's Early Black, 01370, from the Kansas Agricultural Experiment Station as Kansas No. 202, 1909; and 23 other lots from various American sources grown in 1910.

17337. *Early Black.* A selection of 17336 which did not prove to be different.

17338. *California Blackeye.* The progeny of 13457, from Arkansas Agricultural Experiment Station, 1904. See 17335.

17339. *Southdown, or Southdown Mottled.* From T. W. Wood & Sons, Richmond, Va., March, 1902. Medium tall, half bushy, the row mass 24 inches high, 30 inches broad; trailing branches many, 5 feet long, rather coarse; leaflets large, dark, immune to rust, somewhat affected by white leaf-spot; flowers very pale lavender; prolific; pods well filled, held medium high, straw colored, 5 to 8 inches long, the first maturing in about 105 days in 1909 and in 85 days in 1910; seeds oblong, about 6 by 8 mm., white with a large saddle of buff, which sometimes extends over the micropylar end and usually a few scattered spots on the back; iris, olive. This variety has been grown for six seasons. In value it compares with Clay 17340. Identical with it are 17414, obtained from the Arkansas Agricultural Experiment Station, through Prof. C. L. Newman, 1904, as Coffee, and 17413, from the same source, as Calico.

17340. The progeny of 13458, from the South Carolina Agricultural Experiment Station, March, 1902, as Clay. Other lots of the same progeny are numbered 17351 and 17358. Vigorous, the row mass 24 inches high and as broad; trailing branches green, many, 3 to 5 feet long; leaflets medium in size and color, immune to rust but somewhat subject to white leaf-spot, held late; flowers violet purple; fairly prolific; pods held medium low, well filled, straw colored, 6 to 8 inches long, the first maturing in about 100 days in 1909 and in 75 days in 1910; seeds vinaceous buff, subreniform, about 7 by 8 mm. Varying very slightly from the foregoing are the following: 0891, from Mr. J. E. Sloop, Statesville, N. C., as Clay Crowder; 0892 and 18519, from T. W. Wood & Sons, Richmond, Va.; 0893, from the Amzi Godden Seed Co., Birmingham, Ala.; 0894, from J. H. McLean & Sons, Eatontown, N. J., as Mount Olive; 0816, from the Hickory Seed Co., Hickory, N. C.; and 17519A, from T. W. Wood & Sons, Richmond, Va. This variety has been grown as Clay at Arlington Farm for the past eight years. It is closely similar to several other American sorts with buff seeds described under Melear, 17383; Unknown, 13468; Unknown, 27545; Warren's New Hybrid, 17345; Powell's Early Prolific, 17392; and Sixty-Day, 17386. All of these have practically the same habit of growth but differ somewhat in time of maturity and size and form of seeds. Out of 178 lots of buff-colored subreniform seeds from American sources grown in 1910, 21 were not distinguishable from 17340.

17341. From J. M. McCullough's Sons, Cincinnati, Ohio, March, 1902, as Browneye. Low, half bushy, vigorous, the row mass 16 inches high, 30 inches broad; trailing branches many, about 4 feet long; leaflets medium in size, dark, a little affected by rust, much subject to red leaf-spot; flowers almost white; not very prolific; pods well filled, held medium high, straw colored, 7 to 10 inches long, the first maturing in about 80 days; seeds white with a small buff eye, subreniform, about 7 by 9 mm. The earliness of this variety is its only desirable quality.

17342. *Taylor*. The progeny of 13476 from the Alabama Agricultural Experiment Station, March, 1902. Plants low, half bushy, vigorous, the row mass 10 to 14 inches high, 3 feet broad; trailing branches medium in number, 3 to 6 feet long, coarse, leaflets large, medium green, immune to rust, considerably affected by red leaf-spot; flowers violet purple; prolific; pods well filled, held low, straw colored, usually purplish tinged, very large, 8 to 10 inches long, the first maturing in about 90 days; seeds subreniform, very large, about 7 by 10 mm., buff thickly speckled with blue, the blue specks arranged in groups. Identical with 17342 are the following: 17364 and 17368, both from the Alabama Agricultural Experiment Station; 17399 from Mr. F. I. Meacham, Statesville, N. C., as Whittle; 17412 from the Arkansas Agricultural Experiment Station, through Prof. C. L. Newman, as Speckled Java; 0439 from Mr. H. P. Skipper, Chestertown, Md., as Gray Crowder. Miscellaneous lots from six sources grown in 1910 were all typical. The Taylor is the largest seeded of all American cowpeas and is easily recognizable. It is also known in various parts of the country as Gray Goose, Whittle, Java, Speckled Java, and Jervis, the last name probably a mere corruption of Java. This variety is handled to a limited extent by seedsmen. It is well thought of by Prof. A. M. Ten Eyck, of the Kansas Agricultural Experiment Station, and by Prof. H. Garman, of the Kentucky Agricultural Experiment Station. In our experience it is at best a second-rate variety, as the plant is so low in habit and the pods held so near the ground that it is practically impossible to harvest them with a mower. It has been grown at Arlington Farm for seven seasons and has been tested at practically all the experiment stations. (See Pl. V.)

17343. *Early Black.* A selection from 17336, but not different.

17344. See 13468.

17345. *Warren's New Hybrid.* The progeny of 13471 from the Louisiana Experiment Station, March, 1902. Vigorous, viny, the row mass 24 inches high, 2½ feet broad; trailing branches few, 2 to 4 feet long; leaflets dark, medium sized, held late, immune to rust and but little affected by leaf-spot; flowers violet purple; fairly prolific; pods well filled, held rather low, straw colored, 6 to 8 inches long, the first maturing in about 100 days; seeds buff, keeled, subreniform, about 5 by 8 mm. This has been grown for six seasons at Arlington Farm, as well as at Chillicothe and Amarillo, Tex., Stillwater, Okla., and elsewhere. It is a variety of but secondary value.

17346. The progeny of 13455 from the Alabama Agricultural Experiment Station, 1902, as Large Blackeye. Differs from 17335 only in being about 10 days later and in the slightly larger size of the plants; the seeds are indistinguishable. Nos. 17355 and 17362, also from the Alabama Agricultural Experiment Station in 1902, are not distinguishable.

17347. *Groit.* A selection of 17334, which proved to be not different.

17348. *Browneye Crowder.* From the Alabama Agricultural Experiment Station, March, 1902. Low, half bushy, quite vigorous, the row mass 16 inches high, 2 feet broad; trailing branches medium in number, 5 or 6 feet long, coarse; leaflets large, medium sized, a little affected by leaf-spot but not by rust; flowers almost white; pods few, moderately well filled, held medium high, straw colored or somewhat purplish tinged, 4 to 5 inches long, the first maturing in 130 days in 1909; seeds almost globose, 5 or 6 mm. in diameter, creamy white with a medium buff eye. Grown at Arlington Farm for five seasons. This variety is called White Crowder in bulletins of the Alabama Agricultural Experiment Station.

17349. *Whippoorwill.* The progeny of 13475 from T. W. Wood & Sons, Richmond, Va., March, 1902. Tall, suberect, half bushy, vigorous, medium coarse, the row mass 30 to 32 inches high, 3 to 3½ feet broad; trailing branches many, 3 to 6 feet long; leaflets medium in size and color, held fairly late, immune to rust but a little affected by both red and white leaf-spot; flowers violet purple; prolific; pods well filled, held high, straw colored, 6 to 8 inches long, the first maturing in about 90 (82 to 100) days, all mature 20 days later; seeds subreniform, 6 by 8 mm., buff, doubly marbled, a dark brown superimposed on a lighter; iris yellow or yellowish. The Whippoorwill, also called Shinney and Speckled, is at present the leading commercial variety. Its good points are its tall habit and prolificness. The rather long season required makes it, however, too late north of Maryland and Kentucky, and even in these two States it is apt not to mature fully. Apparently the first mention of this variety in literature is in 1855 by Ruffin,[1] who states that he knew it as early as 1843 under the name of Shinney. Whippoorwill is a fairly uniform variety, and but slight differences can be detected in lots from various sources. The slight differences that do exist, however, would seem to justify careful selection in this variety to secure the best strains. Other lots that have proved identical with 17349 are the following: 17357 and 17360 from the South Carolina Agricultural Experiment Station in March, 1902; 18521, 24918, and 27543, all from T. W. Wood & Sons, Richmond, Va.; 19723, from Mr. B. T. Marshall, Fort Valley, Ga.; and 21049, from Fayetteville, Ark. Besides these lots, 12 miscellaneous lots from American sources were tested in 1908 and 110 such lots were tested in 1910, all of which proved to be the variety in question. The seeds alone can not be depended on to identify this variety, as other American sorts have indistinguishable seeds, these being Peerless 25314 and Cardinal 0599. Among the hybrids, of which Whippoorwill is one parent, are the following: Groit 17334, Brabham 21599, Guernsey 17408 and 01508. The seeds of Whippoorwill vary greatly in the proportion of brown. In the lightest seeds the brown marblings occupy not more than 10 per cent of the surface, in ordinary typical seeds about 40 per cent of the surface, and from this on up to clear brown. Such brown seeds are not infrequently found in the same pods with marbled seeds, but in all such cases the plants proved to be heterozygotes. Differing from Whippoorwill only in having purple pods is Cardinal 0599, from Mr. A. W. Brabham, Olar, S. C., grown three seasons.

17350. *Red Ripper.* From the Alabama Agricultural Experiment Station, through Prof. J. F. Duggar, March, 1902. Plants somewhat procumbent, vigorous, very viny, the row mass 16 to 20 inches high, 2½ to 3 feet broad; leaflets large, dark, free from rust, a little affected by red leaf-spot, held late; flowers violet purple; moderately prolific; pods well filled, borne rather low, straw colored, 7 to 8 inches long, the first mature in about 90 days; seeds maroon, rhomboid, 6 by 8 mm. Very similar to the above and distinguishable with difficulty are the following: 17365 from the Louisiana Experiment Station as Red Yellowhull; 17369 from the Mark W. Johnson Seed Co., Atlanta, Ga.; 17519 from T. W. Wood & Sons, Richmond, Va., as Red Carolina. Other varieties of American origin which are very similar but distinct, as proved by tests covering several years, are described under Nos. 17361, 17420A, 22722, 24919, 25088, 25512C, 29286, and 29289. Besides these 3 lots, 40 lots having maroon seeds similar to 17350 from different American sources were tested in 1910. A brief discussion of the results obtained with these different lots will illustrate the complexity of the matter of varieties in this group. Of the 40 lots, 30 resembled 17350 very closely in habit and general appearance. Seven of these lots agreed perfectly with 17350 both as to seed and to field behavior. Ten lots were about five days later, of which two had seeds like 17350; four others were alike but with seeds somewhat different from 17350; while the remaining four were all distinct in their seed and pod characters. Thirteen lots matured two weeks later than 17350. Seven of these lots are alike (see 01281), one is identical with 24919, while the remaining five represent in pods and seed characters four varieties. This group of cowpeas is thus seen to be very complex from the standpoint of varietal distinctions. Practically this is of little importance as all of these have much the same habit, differing mainly in earliness and seed characters. None of them is especially valuable, 29286 being perhaps the best. The name Red Ripper has been applied to several closely similar varieties of cowpeas and is perhaps best considered as a group name. There seems to be no possibility of determining positively to which one of the groups the name was first given. The first publication of the name found is in the American Agriculturist, in 1876 (vol. 35, p. 139), where only the seeds are described. There is nothing to prove that the Red Ripper described by Starnes[1] is the same as the one here described, though it seems probable that such is the case as some of the Alabama Agricultural Experiment Station varieties were obtained from him.

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[1] Ruffin, Edmund, Essays and Notes on Agriculture, 1855, pp. 354, 363.

17351. A selection from 13458, but not distinct. See 17340.

17352. *Warren's Extra Early.* The progeny of 13470 from Arkansas Agricultural Experiment Station, March, 1902; originally from W. H. Maule, Philadelphia, Pa. This was grown three seasons and could not be distinguished from Warren's New Hybrid, 17345, from the Louisiana Experiment Station, or another lot under the same name from the Arkansas Agricultural Experiment Station grown under No. 0877. In 1910 two lots, 01359 and 01360, supposed to represent Warren's New Hybrid and Warren's Extra Early, were received from the Indiana Agricultural Experiment Station. Two lots were also received in 1910 from the Kansas Agricultural Experiment Station, 01371 as Warren's New Hybrid and 01372 as Warren's Extra Early. These four lots all looked alike, but the two Kansas lots were a few days earlier than the Indiana samples, and these in turn 10 days earlier than 17345. The seeds of all are quite alike. Therefore, there is either confusion in regard to the name, or No. 17345 has become later. Apparently, however, the two names refer to the same variety.

17353. *Unknown.* A selection of 13468, but not different. See 17344.

17354. *Old Man.* Obtained from the Arkansas Agricultural Experiment Station, through Prof. C. L. Newman, March, 1902. Procumbent, rather weak, the row mass 10 to 12 inches high, 18 inches broad; trailing branches few, 1 to 1½ feet long, not twining; leaflets medium sized, dark, immune to rust, much affected by both red and white leaf-spot; flowers pale violet purple; prolific; pods well filled, held low, straw colored, 5 to 6 inches long, the first maturing in about 75 days; seeds globose, about 5 mm. in diameter, yellowish, often with irregular rusty markings, the eye quite large and buff; iris olive. This variety has been grown for six seasons. It is a typical crowder with a typical crowder habit and has but little merit for forage purposes.

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[1] Bulletin 26, Georgia Experiment Station, p. 182.

17354A. Found in the 1909 Arlington Farm culture of 17354, probably a hybrid between that and Taylor. Differs from 17354 in the seed especially, which is of the same size, shape, and color, but the eye is speckled like Taylor and the iris black.

17355. *Large Blackeye.* A selection from 13455, but not distinct. See 17346.

17356. *Unknown.* A selection of 13468, but not different. See 17344.

17357. *Whippoorwill.* See 17349.

17358. *Clay.* A selection of 13458, but not different. See 17340.

17359. *Lady.* From the Plant Seed Co., St. Louis, Mo., 1902. Low, half bushy, moderately vigorous, the row mass 16 to 20 inches high, about 3 feet broad; trailing branches not numerous, 1 to 3 feet long, twining; leaflets medium in size and color, immune to rust, a little affected by red leaf-spot; flowers white; fairly prolific; pods well filled, held medium high, straw colored, 6 to 7 inches long, the first maturing in about 85 days; seeds oblong, 5 by 8 mm., white; the iris greenish. This variety, which is only of moderate size, has been grown for five seasons. It is also represented by the following numbers: 17373, 17388, 17401, 17415.

17360. *Whippoorwill.* From South Carolina Agricultural Experiment Station, 1902. See 17349.

17361. *Red Crowder.* From Arkansas Agricultural Experiment Station in 1903, through Prof. C. L. Newman, as Red Ripper. Half bushy, viny, moderately vigorous, the row mass 18 to 24 inches high, 2½ feet broad; branches many, 3 to 5 feet long, green to purplish; leaflets dark, held late, immune to rust, a little subject to red leaf-spot; flowers violet purple; moderately prolific; pods held fairly high, well filled, 5 to 6 inches long, straw colored, the first maturing in 106 days; seeds maroon, globose to rhomboid, about 6 by 6 mm. Identical with this variety are 17428, also from the Arkansas Agricultural Experiment Station, and 17393 from Mr. F. I. Meacham, Statesville, N. C., both as Red Crowder. Not so prolific as 17350, but taller and the pods held up higher.

17362. *Large Blackeye.* A selection from 13455, but not different. See 17346.

17363. From the Arkansas Agricultural Experiment Station, March, 1902. A hybrid between White Crowder and Taylor made by Prof. C. L. Newman. Medium tall, half bushy, quite vigorous, the row mass 20 inches high, 2 feet broad; trailing branches rather few, 2 to 4 feet long; leaflets large, dark, immune to rust, considerably affected by leaf-spot; flowers almost white; prolific; pods well filled, held medium high, straw colored, often purplish tinged, 5 to 8 inches long, the first maturing in about 105 days; seeds typical crowder, subglobose, about 7 mm. long and as broad, white or yellowish with a large saddle of the Taylor coloration which usually extends over the micropylar end, and usually with a few scattered spots of the same color; iris dark, nearly black. No. 26592 from Mr. J. L. Forelines, Millard, Ark., is the same. This variety is very similar to Speckled Crowder 22051, and of about equal value.

17364. *Taylor.* A selection of 13476, but not distinct. See 17342.

17365. *Red Yellowhull.* From Louisiana Experiment Station, 1902. This was not distinguishable from 17350, but was different from 29286.

17366. *White Giant.* From Alabama Agricultural Experiment Station, 1902. The original seeds of this number are identical with 29299, but the brief descriptive notes are insufficient to make the identification certain.

17367. *Iron.* Progeny of 13460. See 8418.

17368. *Taylor.* A selection of 13476, but quite the same. See 17342.

17369. From the Mark W. Johnson Seed Co., Atlanta, Ga., March, 1903. See 17350.

17370. *Brown Crowder.* From Mr. L. Cameron, Jacksonville, Fla., March, 1903. Vigorous, half bushy, viny, the row mass 20 inches high, 16 inches broad; trailing branches medium coarse, few, about 2 feet long, green or purplish; leaflets dark, small, immune to rust, much affected by red leaf-spot; flowers pale violet purple; prolific; pods moderately well filled, held medium high, straw colored, about 6 inches long, the first maturing in about 80 days; seeds vinaceous buff, subglobose, smooth, about 7 by 7 mm.; iris brown. The Brown Crowder is taller than most crowder varieties, but has no great merit. It has been grown at Arlington Farm for six years, and also at Chillicothe and Amarillo, Tex., and Stillwater, Okla.

17371. *Whippoorwill Crowder.* From Mr. L. Cameron, Jacksonville, Fla., March, 1903. Medium low, half bushy, moderately vigorous, the row mass 12 to 14 inches high, 2½ feet broad; trailing branches green, coarse, few, 2 to 4 feet long; leaves medium in size and color, immune to rust, little subject to leaf-spot; flowers pale violet purple; fairly prolific; pods held rather low, straw colored, 5 to 6 inches long, the first maturing in about 75 days, 90 per cent being ripe 30 days later; seeds subglobose, about 6 mm. in diameter, buff marbled brown. Decidedly inferior to ordinary Whippoorwill in the six seasons it has been grown.

17372. *Wight Black Crowder.* From Cairo, Ga., April, 1903. Procumbent, the coarse stems mostly lying on the ground, 1 to 3 feet long; the row forming a thin mass 6 to 10 inches high, 2 to 3 feet broad; leaflets large, immune to rust, much affected by leaf-spot, shed early; flowers violet purple; prolific; peduncles stout, erect; pods 6 to 7 inches long, as broad as thick, straw colored or purplish, slightly torulose, the first mature in about 85 days; valves thick; seeds subglobose or somewhat compressed, about 8 mm. in diameter. It is hardly distinguishable from a variety from Mr. George M. Simms, Canyon, Tex., grown four years under No. 0802. Compare 22052.

17373. *Delicious* or *Small Lady.* From Texas Seed and Floral Co., Dallas, Tex., March, 1903. See 17359.

17374. *Red Whippoorwill.* From Mr. C. E. Brush, Atlanta, Ga., May, 1903. Tall, vigorous, viny, the row mass 30 to 36 inches high, 4 feet broad; trailing branches many, 3 to 6 feet long; leaflets dark green, medium large, free from rust and leaf-spot, held late; flowers violet purple; moderately prolific; pods well filled, held high, straw colored, 6 to 7 inches long; seeds subreniform, maroon marbled with dark brown or black, 6 by 8 mm. At Arlington Farm the first pods matured as follows: 1905, in 120 days; 1906, pods did not mature in 127 days; 1907, in 136 days; 1908, in 101 days; 1909, in 104 days. The Red Whippoorwill in a general way resembles Whippoorwill, but is much later, decidedly more viny, not so upright, and less prolific. The same variety was obtained from the Arkansas Agricultural Experiment Station through Prof. C. L. Newman in 1903, and grows as 0603 and 17416. Later and taller with paler foliage and less prolific are 01398 with seeds like 17374 and 01399 with pink marbled seeds, both from Mr. J. C. Little, Louisville, Ga., 1909.

17375. From Sumbalpur district, Central Provinces, India, 1903, under the vernacular name "Jhunga." Seeds buff, oblong, 6 by 9 mm. Very procumbent, the row mass 10 inches high, with prostrate branches 5 feet long; late, no pods maturing at Arlington Farm in 132 days before being killed by frost. At Chillicothe, Tex., it was of very similar habit but did not come to bloom.

17376. Catjang. From Satara, Bombay Presidency, India. Vernacular name "Chauli." Low, half bushy, not at all twining, the row mass 8 to 12 inches high; trailing branches medium in number, 1 or 2 feet long; leaflets small, dark, considerably attacked by rust, not much by leaf-spot; flowers, pale violet purple; prolific; pods well filled, held erect, straw colored, 3 to 4 inches long, the first maturing in about 110 days; seeds oblong, white with a buff eye, about 3 by 4 mm.; iris dark brown. A remarkably distinct variety of catjang that has been grown for four seasons. The small, thickish leaflets are often paler along the midrib. It is not of any particular promise.

17377. Catjang mixed with 17381 from Coimbatore, Madras, India, 1903. Seeds buff, oblong, 4 by 5 mm.; plants procumbent, 18 inches high with trailing branches 3 to 4 feet long; first pods maturing in 82 days in 1905. Too low and viny, as well as too shy a seeder to be valuable.

17378. Catjang. From United Provinces, India, 1903, under the vernacular name "Bhadela." Seeds buff, oblong, variable in size, 3 to 5 by 5 to 7 mm. Very similar in all respects to 17375 in 1905, the only season grown.

17379. An admixture in the preceding, the seeds darker, a difference due to weathering. Grown in 1905, when it was not distinguishable from 17378.

17380. Mixed with 17382 from Jabalpur, Central Provinces, India, 1903. Seeds reddish, oblong, 5 to 6 by 7 to 8 mm. Plants procumbent, 12 to 15 inches high, with trailing, slender branches 3 to 4 feet long; no pods mature in 130 days in 1905 when killed by frost. Too late and sprawling to be valuable.

17381. Catjang from Coimbatore, Madras, India, 1903, under the vernacular name "Choli." Indistinguishable from 17377 both as to seeds and plants.

17382. From Jabalpur, Central Provinces, India, 1903, under the vernacular name "Barbati." Not distinguishable from 17380.

17383. *Melear.* From Mr. R. T. Melear, McKenzie, Tenn., December, 1903. This variety closely resembles both Unknown 13468 and Clay 17340, being about intermediate between them, and difficult to distinguish excepting where the three are growing side by side.

Mr. Melear writes that it is the progeny of a single plant that he found in a field of Black cowpeas. He further writes that this variety does not climb when planted in corn and that the seeds will lie in the field all winter and be sound in spring.

17384. *Black* × *Iron.* A hybrid from Mr. W. A. Orton, his No. 14a2–2–1. See 27859.

17385. *Black* × *Iron.* A hybrid from Mr. W. A. Orton, his No. 14a2–2–1. See 27859.

17386. *Sixty-Day.* From Mr. I. F. Cherry, Rocky Mount, N. C., in 1905. Low, half bushy, vigorous, the row mass 18 inches high, 2 feet broad; trailing branches many, 4 feet long; leaflets medium in size and color, immune to rust, moderately affected by leaf-spot; flowers violet purple; not prolific; pods well filled, held medium high, straw colored, 7 to 9 inches long, the first maturing in about 100 days; seeds cream buff to vinaceous buff, oblong to rhomboid, about 6 by 8 mm., rather strongly keeled. Judging from its behavior at Arlington Farm, it is not a desirable variety; grown for six seasons.

17387. *Sixty-Day.* From Mr. F. I. Meacham, Statesville, N. C., June, 1905. Identical with the preceding.

17388. From the Amzi Godden Seed Co., Birmingham, Ala., April, 1905, as Lady Finger. This proved to be identical with 17359.

17389. *Black* × *Iron.* A hybrid from Mr. W. A. Orton, his No. 14a–5–1–1. See 27859.

17390. From the Amzi Godden Seed Co., Birmingham, Ala., April, 1905, as Grayeye. Low, half bushy, vigorous, the row mass 22 inches high, 4 feet broad; trailing branches coarse, many, 6 to 8 feet long; leaflets large, medium dark, immune to rust, a little affected by both red and white leaf-spot; flowers almost white; not prolific; pods well filled, held rather high, straw colored or sometimes tinged with purple, 4½ to 5½ inches long, the first maturing in about 90 days; seeds subreniform, white with a medium reddish-buff eye, 5 by 7 mm. Grown four seasons.

17390A. Similar in habit and date of maturity; pods 6 to 7 inches long; seeds oblong, 5 by 7 mm., white with a small buff eye; iris olive.

17391. From Monetta, S. C. A selection by Mr. W. A. Orton in 1902 from a field of Clay cowpeas on account of its wilt resistance. It proved to be identical with Iron.

17392. *Powell's Early Prolific.* From Mr. F. I. Meacham, Statesville, N. C., May, 1905. Half bushy and very viny, vigorous, the row mass 24 inches high, 2½ feet broad; trailing branches medium in number, about 3 feet long, green or purplish; leaflets dark, rather large, held late, immune to rust and but little affected by leaf-spot; flowers violet purple, very prolific; pods fairly well filled, held medium high, straw colored, 7 to 8 inches long, the first maturing in about 100 days; seeds vinaceous buff, rhomboid, about 7 to 8 by 10 mm. Grown five seasons; comparable in value to Clay, 17340.

17393. *Red Crowder.* From Mr. F. I. Meacham, Statesville, N. C., May, 1905. See 17361.

17394. *Yellow Sugar Crowder.* From Mr. F. I. Meacham, Statesville, N. C., May, 1905. Procumbent, the row mass 15 inches high, with trailing branches 5 to 6 feet long; late, only a few pods being mature in 120 days when killed by frost; seeds rhomboid, 7 by 7 mm., transversely wrinkled, yellowish, with a large reddish-buff eye. Grown only in 1905; a very distinct variety as to seeds.

17395. *Iron.* This and the three following are from Monetta, S. C., April, 1905, selections by Mr. W. A. Orton, but under Arlington Farm conditions not different.

17396. *Iron.* See 17395.

17396A. *Iron.* See 17398A.

17397. *Iron.* See 17395.

17398. From Mr. F. I. Meacham, Statesville, N. C., May, 1905, as Browneye Crowder. Seeds not crowder in form but subreniform, white with a medium buff eye, apparently the same as 17390. No field notes on this number.

17398A. Low, half bushy, the row mass 16 inches high, 18 inches broad; trailing branches many, about 3 feet long; leaflets medium in size and color, immune to rust and little affected by leaf-spot; flowers white; prolific; pods well filled, held medium low, straw colored, 6 to 8 inches long, the first maturing in about 90 days; seeds subreniform, rhomboid, burnt umber in color, about 6 by 8 mm. Identical with this is 17396A, found growing in 17396, from Monetta, S. C. This variety is somewhat superior to 17404.

17399. *Whittle.* From Mr. F. I. Meacham, Statesville, N. C., May, 1905. Identical with Taylor 17342.

17400. *Black × Iron.* A hybrid from Mr. W. A. Orton, his No. 14b5–1–1. See 27859.

17401. *Rice.* From T. W. Wood & Sons, Richmond, Va., April, 1904. See 17359.

17402. *Michigan Favorite.* From Mr. E. E. Evans, West Branch, Mich. See 13472.

17403. From T. W. Wood & Sons, Richmond, Va., April, 1904, as New Era. Same as Groit 17334.

17404. *Brown Coffee.* From Mr. Joe M. Johnson, Monetta, S. C., May, 1904. Low, half bushy, the row mass 12 to 20 inches high and about as broad; trailing branches few, 1 to 3 feet long, green; leaflets medium in size, rather pale, immune to rust, but moderately affected with red leaf-spot; flowers white; fairly prolific; pods held rather low, straw colored, or rarely purplish tinged, 5 to 7 inches long, the first maturing in about 105 days; seeds burnt umber in color, subreniform, about 7 by 8 mm. A little-grown variety of excellent bushy habit and quite prolific, but of only moderate size. It has been grown for six seasons. The following lots are indistinguishable from it: 0424, from Mr. J. W. Trinkle, Madison, Ind., 1906, and 17396A. No. 17398A is slightly different.

17405. *Louisiana Wild.* From the J. Steckler Seed Co., New Orleans, La., March, 1904. Vigorous, very viny, the row mass 22 inches high, 2½ feet broad; trailing branches many, growing 4 to 5 feet long; leaflets dark, medium sized, held late, immune to rust, little affected by leaf-spot; flowers pale violet purple; pods very few, well filled, held medium high, straw colored, often purple tinged, 6 inches long, the first maturing in 100 days; seeds cream buff, rhomboid, about 5 by 6 mm. A vigorous grower of good habit, but not fruitful. This is very similar to a later lot from the same source, No. 25512.

17405D. Medium tall, very viny, vigorous, the row mass 20 inches high, 3 feet broad; trailing branches many, 3 to 5 feet long, green to purplish; leaflets medium in size and color, held late, free from rust and but little subject to leaf-spot; flowers pale violet purple; not prolific; pods poorly filled, held high, drab in color, 4½ to 6 inches long, the first maturing in about 100 days; seeds subreniform, vinaceous rufous, about 5 by 7 mm. A variety of good habit, but too shy a seed bearer. In 1908 the first pods matured in 120 days. Grown four seasons.

17405E. Half bushy, very viny, vigorous, the row mass 18 inches high, 30 inches broad; trailing branches many, 3 to 5 feet long; leaves free from rust and little affected by leaf-spot; flowers pale violet purple; not prolific; pods held high, well filled, drab in color, 4 to 6½ inches long, the first maturing in 105 days; seeds maroon, subreniform, about 5 by 6 mm. Similar to 25512C, but different.

17405F. Half mushy, rather weak, only 10 to 12 inches high; trailing branches few, 2 to 4 feet long, the row making a thin mass 3 feet wide; leaves rather small, angular, immune to rust; flowers violet purple; moderately prolific; pods well filled, straw colored, 4 to 6 inches long, the first mature in about 70 days; seeds black, small, 5 by 7 mm. Much inferior to 25512A, and with smaller pods and seeds.

17405G. Suberect, half bushy, moderately vigorous, the row mass 18 inches high, 2 feet broad; trailing branches rather slender, purplish; leaflets medium sized, free from rust, somewhat affected by red leaf-spot; flowers pale violet purple; pods well filled, held medium high, 4 to 4½ inches long, the first maturing in about 85 days; seeds subglobose, vinaceous, 4 by 5 mm.; the iris brown. This is a prolific variety, with seeds almost as small at catjangs.

17405H. Very similar to 17405G, but with the pods spreading at right angles and earlier, the first pods ripening in about 70 days.

17406. *Michigan Favorite.* See 17402 and Plate V.

17407. From the J. Steckler Seed Co., New Orleans, La., March, 1904. This selection with buff seeds proved identical with 17405. See discussion under 25512.

17408. *Guernsey.* From the Arkansas Agricultural Experiment Station, 1904. A hybrid between Whippoorwill and Blackeye made by Prof. C. L. Newman. Half bushy, vigorous, the row mass 18 inches high, 22 inches broad; trailing branches rather few, coarse, 2 to 4 feet long, and scarcely twining; leaflets large, dark, immune to rust, a little affected by leaf-spot; flowers pale lavender; moderately prolific; pods well filled, held rather high, straw colored, 4 to 8 inches long, the first maturing in about 90 days; seeds white, variously mottled with the Whippoorwill colors, the latter being arranged around the eye in a saddle, sometimes with a large spot at the micropylar end which may be united with the saddle, rarely with a few small spots on the back; iris yellow. This variety has very much the habit of Holstein 17327. It is somewhat superior in habit to Blackeye 17335, but not nearly so good as Whippoorwill. Grown for six seasons at Arlington Farm, and at Chillicothe, Tex., Audubon Park, New Orleans, La., and Stillwater, Okla. A second lot of the same cowpea was obtained from Prof. C. L. Newman in 1908, and grown under 22730.

17409. *Ayrshire* or *Whippoorwill Saddleback.* From the Arkansas Agricultural Experiment Station, received through Prof. C. L. Newman, his No. 10, May, 1904; evidently a cross of Taylor and Blackeye. Medium, half bushy, the row mass 18 inches high, 2 feet broad; trailing branches rather few, coarse, 2 to 4 feet long; leaflets large, dark, immune to rust, a little affected by both red and white leaf-spot; flowers almost white; prolific; pods well filled, held medium high, straw colored or somewhat purplish tinged, 6 to 7 inches long, the first maturing in about 90 days; seeds subreniform, about 6 by 8 mm., the ground color white, nearly concealed by the Taylor coloration; iris black; the Taylor color commonly covers the whole of the seed excepting the chalazal end; occasionally, however, the whole back of the seed is also white, and in this there may be scattered spots of the Taylor coloring. The habit of this is about identical with Guernsey 17408, and Holstein 17327. It has been grown at Arlington for five seasons; also at Audubon Park, New Orleans, La., and Stillwater, Okla.

17410. *Black* × *Blackeye.* From the Arkansas Agricultural Experiment Station, May, 1904, through Prof. C. L. Newman. See 17327.

17411. From the Arkansas Agricultural Experiment Station, May, 1904, through Prof. C. L. Newman, "a selection from New Era." Same as Groit 17334.

17412. *Speckled Java.* From Arkansas Agricultural Experiment Station, 1904. Identical with Taylor, 17342.

17413. From Arkansas Agricultural Experiment Station, May, 1904, as Calico. See 17339.

17414. From Arkansas Agricultural Experiment Station, May, 1904, as Coffee. See 17339.

17415. From the Arkansas Agricultural Experiment Station, May, 1904, as Conch. This proved the same as 17359.

17416. *Red Whippoorwill.* From Arkansas Agricultural Experiment Station, May, 1904. Identical with 17374.

17417. From Arkansas Agricultural Experiment Station, May, 1904, "a cross between Black and Extra Early Blackeye," by Prof. C. L. Newman. See 17327.

17418. *Holstein.* From Arkansas Agricultural Experiment Station, May, 1904, one of Prof. C. L. Newman's crosses of Black and Extra Early Blackeye. See 17327.

17419. *Little Iron.* From Arkansas Agricultural Experiment Station, May, 1904. Same as Iron, 8418.

17420. *Blackeyed Lady.* From the Arkansas Agricultural Experiment Station, May, 1904, through Prof. C. L. Newman. Low, half bushy, viny, not very vigorous, the row mass 14 inches high, 2 feet broad; trailing branches medium in number, 3 to 5 feet long; leaflets medium in size and color, immune to rust, much attacked by red leaf-spot; flowers white to pale lavender, fairly prolific; pods well filled, held medium high, straw colored or sometimes purple tinged, 4 to 8 inches long, the first maturing in about 85 days; seeds globose, about 6 mm. in diameter, white with medium-sized black eye. A variety used as a table pea; not of much value for forage; grown six seasons. (See Pl. V.)

17420A. Plants half bushy, viny, vigorous, the row mass 16 to 18 inches high, 2 to 3 feet broad; trailing branches few, 2 to 4 feet long, green; leaflets free from rust, somewhat affected by red leaf-spot; flowers pale violet purple; prolific; pods well filled, held medium high, straw colored, 6 to 8 inches long, slender, 8 mm. broad, the first mature in 100 days, 90 per cent ripe in 130 days; seeds maroon, subreniform, 6 by 8 mm. Closely resembles 29286 in habit. The narrow pods and small seeds distinguish it, however, from this as well as from Red Crowder 17361.

17421. From Arkansas Agricultural Experiment Station, May, 1904. Seeds maroon, oblong reniform, 7 by 10 mm., quite indistinguishable from 22722, with which it is probably identical. Grown only in 1905.

17422. From the Arkansas Agricultural Experiment Station, May, 1904, received through Prof. C. L. Newman, his No. 30. Said to be a hybrid between Warren's Extra Early and Sugar Crowder. Low, half bushy, the row mass 12 to 14 inches high, 3 feet broad; trailing branches few, 2 to 4 feet long; leaflets medium in size and color, immune to rust, considerably affected by red leaf-spot; flowers violet purple; quite prolific; pods well filled, held medium high, straw colored, about 8 inches long, the first maturing in 100 days; seeds plump, oblong, about 7 by 9 mm., yellowish, with a rather indefinite eye of buff or purplish gray, the edge of the eye usually marked by an indistinct rusty line; iris olive. This variety has been grown for five seasons at Arlington Farm. The same variety was received again from Prof. Newman in 1908, his No. 57, and grown under 22729.

17423. *Iron Mountain.* From Arkansas Agricultural Experiment Station, May, 1904. Same as Iron, 8418.

17424. From Arkansas Agricultural Experiment Station, 1904, a cross between Black and Extra Early Blackeye. See 17425.

17425. *Watson* or *Watson's Hybrid.* Obtained from the Arkansas Agricultural Experiment Station, through Prof. C. L. Newman, May, 1904. Low, half bushy, moderately vigorous, the row mass 24 to 28 inches high, 3 feet broad; trailing branches few, rather coarse, about 2 feet long; leaflets medium in size and color, immune to rust, much affected by red leaf-spot and somewhat by white leaf-spot; flowers pale violet purple; moderately prolific; pods curved, fairly well filled, held moderately high, straw colored, 6 to 9 inches long, the first maturing in about 100 days; seeds subreniform, about 6 by 8 mm.; color peculiar, in general effect being grayish or bluish, varying from very pale to very dark even on the same plant; it is apparently diffused black, under the lens having a minutely granular appearance, somewhat resembling the speckling of the Taylor cowpea, but certainly different; eye black, not sharply delimited. This is a variety of only secondary merit. It has been grown for six seasons at Arlington Farm, and at various other places. Practically identical with the foregoing are the following, all from Prof. C. L. Newman, which are said to be hybrids of Blackeye and Black Bunch: 17424, 22716, 22718, and 22719. The plants under these numbers have identically the same seed color as 17425 ,and otherwise have but very slight observable differences. Seeds of the color of Watson may be found not uncommonly in lots of seed of the Blackeye varieties, no doubt caused by crossing with Black cowpeas. As there are numerous varieties of Blackeye cowpeas as well as of Black, it is to be expected that among the hybrids of these will be the Watson color of seed while the plants will vary in habit considerably. Watson's Hybrid is also known as Sport. The Watson Hybrid mentioned in Bulletin 62 (ser. 2), Louisiana Experiment Station, 1900 (p. 466), may be this variety; the agronomic notes on Watson's Hybrid in Bulletin 81, Delaware College Agricultural Experiment Station, are based on 17425.

17425A. Probably an extracted hybrid. Same as 17327.

17426. From Arkansas Agricultural Experiment Station, May, 1904, as Mount Olive. Seeds buff, apparently identical with 17344. Grown only in 1905, the field notes indicating that these plants are very similar.

17427. *Sport.* From the Arkansas Agricultural Experiment Station, May, 1904, through Prof. C. L. Newman. In all respects like Watson, 17425, except that the pods are straight and the seeds smaller, rhomboid, 6 by 7 mm. Prof. Newman states that this is a hybrid of Blackeye and Extra Early Black. Another lot of the same thing was obtained later and numbered 22721. Two of the hybrids obtained from Mr. J. W. Trinkle, Madison, Ind., and grown under Nos. 0423 and 0618 are extremely similar but about 10 per cent better, being taller and later. No. 0624 from the same source had the pods badly distorted by disease. Agronomic notes concerning Sport, 17427, are published in Bulletin 81, Delaware College Agricultural Experiment Station.

17428. *Red Crowder.* From Arkansas Agricultural Experiment Station, May, 1904. See 17361.

17429. From the Arkansas Agricultural Experiment Station, May, 1904. Seeds buff like 13468. Available field notes are very brief but indicate that the plant is very similar to 13468.

17430. *Iron.* From Mr. S. M. Byrd, Grovetown, Ga., January, 1905. Progeny of 8418. (See Pl. V.)

17431. *Iron.* From Mr. H. Abild, Wakonda, S. Dak. March, 1905. Progeny of 8418.

17432. *Michigan Favorite.* From Mr. H. Abild, Wakonda, S. Dak., March, 1905. Progeny of 11344.

17433. *Iron.* From Mr. W. J. Edwards, Willshire, Ohio, March, 1905. Progeny of 8418.

17434. *Iron.* From Mr. C. G. Diament, Bridgeton, N. J., March, 1905. Progeny of 8418.

17435. *Iron.* From various sources in 1905. Progeny of 8418.

17436. *Iron.* From Mr. C. C. Dulebohn, Kearney, Kans., March, 1905. Progeny of 8418.

17492. Asparagus bean. Progeny of 11074. From Abyssinia. Indistinguishable from 22902 in growth and habit. Pods slightly more inflated; seeds larger, 7 by 11 mm., reddish purple.

17493. Asparagus bean. Progeny of 11091.

17519. *Red Carolina.* From T. W. Wood & Sons, Richmond, Va., February, 1906. See 17350.

17519A. See 17340.

17693. *Cream.* From the Texas Seed and Floral Co., Dallas, Tex., February, 1906. Low, half bushy, moderately vigorous, somewhat viny, the row mass 12 to 18 inches high and about as broad; trailing branches few, 1 to 3 feet long; leaflets medium sized, dark, immune to rust, considerably affected by both red and white leaf-spots; flowers white; prolific; pods not well filled, held rather low, straw colored, 4 to 6 inches long, the first maturing in about 100 days; seeds creamy white, subglobose, about 6 mm. in diameter; iris greenish. This variety is a table pea and of only secondary value for forage. It has much the habit of black-eyed varieties, the tips of the branches being viny and bearing smaller leaflets.

17697. *Iron.* From T. W. Wood & Sons, Richmond, Va., February, 1906. See 8418.

17849. From Tientsin, Chihli, China, February, 1906. Medium low, viny, vigorous, the row mass 18 to 20 inches high, 3 feet broad; trailing branches not numerous, 3 to 5 feet long; leaflets medium in size and color, considerably subject to leaf-spot and somewhat affected by rust in 1908, but not in 1909; flowers pale violet purple; prolific; pods fairly well filled; held medium high, straw colored or reddish, 7 to 8 inches long; the first mature in about 85 days; seeds subreniform, 6 by 8 mm., buff marbled with brown, the iris yellow. This resembles Whippoorwill more closely than any other Chinese variety. It differs, however, in being earlier, not so tall, and subject to rust. The Chinese are said to use this as a vegetable and roasted as confectionery.

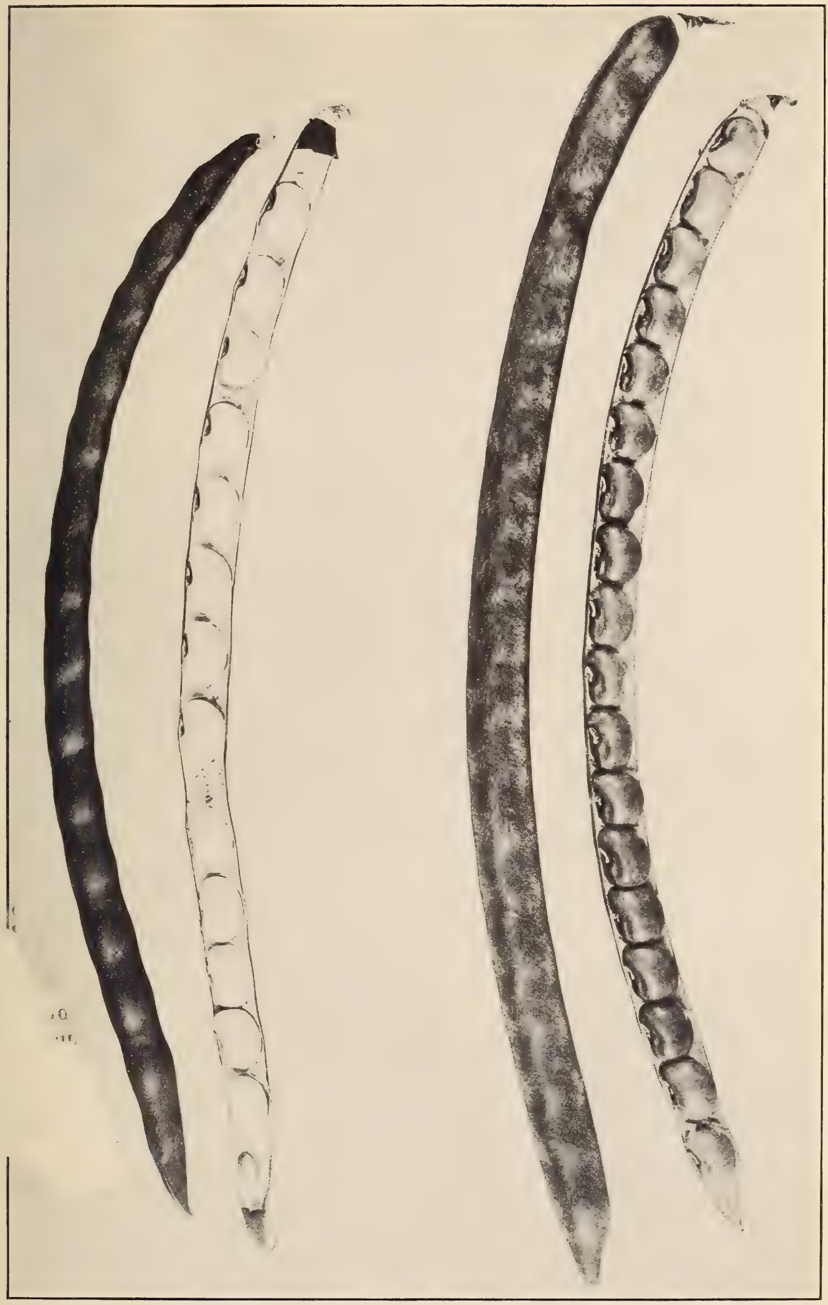
17849A. Similar in all respects to 17849 except that the chalazal end of the seed is white.

17855. From Shanhaikwan, Chihli, China, February, 1906. Low, half bushy, vigorous; the row mass 18 inches high, 2 feet broad; trailing branches medium in number, 3 to 4 feet long; leaflets medium in size and color, a little affected by rust and by white leaf-spot; flowers violet purple; not prolific; pods moderately well filled, held medium high, straw colored, 5 to 6 inches long, the first maturing in about 90 days; seeds white with large reddish-buff eye; subreniform; about 5 by 7 mm.; iris darker. A distinct variety of only ordinary merit; grown four seasons. No. 21297C, from P
jale Province, India, is apparently identical.

17856. From Shanhaikwan, Chihli, China, February, 1906. Half bush
row mass 12 inches high, 16 to 18 inches broad; trailing
few, 3 feet long, green or reddish; leaflets dark, mediu
shed rather early, somewhat affected by both rust and
spot; flowers pale violet purple; pods rather few, well
medium high, dark drab in color, 5 to 8 inches lo
maturing in about 90 days; seeds buff pink to vina
white spot at the chalazal end, subreniform, about to 8 mm. This variety was grown four seasons at Arlington and also at Stillwater, Okla., and Audubon Park, La. Not a desirable sort.

18519. From T. W. Wood & Sons, Richmond, Va., May, 1906, as Clay. See 17340.

18519A. *Purple-Podded Clay.* Low, half bushy, viny, the row mass 18 inches high, 3 to 3½ feet broad; trailing branches many, 3 to 6 feet long and rather coarse, reddish purple; leaflets large, dark, immune to rust, but somewhat subject to white leaf-spot, inclined to be



PODS OF TWO VARIETIES OF COWPEAS WITH KIDNEY-SHAPED SEEDS: NO. 18519A ON THE LEFT, NO. 21299B ON THE RIGHT.

(Three-fourths natural size.)

purplish; flowers pale violet purple; moderately prolific; pods well filled, held rather low, dark purple when immature, purple when ripe, the first maturing in about 105 days; seeds subreniform, vinaceous pink, about 7 by 9 mm., rather strongly keeled. This variety is 10 days later than 18519 and differs especially in the purplish color of the whole plant. (See Pl. IX.)

18520. From T. W. Wood & Sons, Richmond, Va., May, 1906, as Red Ripper. No cultural notes.

18521. *Whippoorwill.* From same source as 18520. See 17349.

18522. *New Era.* From same source as 18520. See 21088.

18617. From Shanhaikwan, Chihli, China, May, 1906. Low, half bushy, moderately vigorous, the row mass 18 inches high, 2 feet broad; trailing branches rather few, a foot or so long, green or purplish; leaflets medium sized, dark, not affected by rust, but considerably by red leaf-spot; flowers pale violet purple; moderately prolific; pods well filled, held medium high, straw colored, often purplish tinged, 5 to 8 inches long, the first maturing in about 75 days; seeds oblong reniform, about 7 by 10 mm., white with a maroon saddle which usually extends over the micropylar end and commonly has a few scattered spots on the back. Not a desirable variety. No. 22903 is closely similar.

19723. *Whippoorwill.* From Fort Valley, Ga., January, 1907. See 17349.

19777. *Iron.* From Monetta, S. C., January, 1907. See 8418.

20005. Asparagus bean. From Antung, Manchuria, February, 1907. Plants procumbent, very viny, the mass 10 inches high, 18 inches broad; stems rather slender; branches few, 2 to 3 feet long; leaflets large, dark, somewhat affected by both rust and leaf-spot; flowers purple; fairly prolific; pods purple, 8 to 12 inches long, much inflated; seeds reddish buff, reniform, 4 to 5 by 8 mm., a few longitudinally striate impressions on the sides; first pods maturing in about 80 days.

20006. Asparagus bean. From Antung, Manchuria, February, 1907. Identical with the preceding in every respect except character of seeds. Seeds black, 5 by 9 mm.

20980. From Nairobi, British East Africa, May, 1907. Rather tall, half bushy, vigorous, the row mass 22 inches high, 30 inches broad; trailing branches many, 4 to 5 feet long, purplish; leaflets medium sized, dark, purplish, not affected by rust or leaf-spot; flowers almost white; no pods maturing at Arlington in 1907, 1908, or 1909; original seeds short, subreniform or rhomboid, about 6 by 7 mm., white with a black eye. A very late and vigorous variety of excellent habit. One of the best of the very late varieties tested.

20980A. Half bushy, viny, very vigorous, the row mass 24 to 28 inches high, 2½ to 3 feet broad; trailing branches many, 3 to 4 feet long; leaflets free from rust and but little affected by leaf-spot, held late; flowers violet purple; not prolific; pods 5 to 7 inches long, straw colored or somewhat purplish, the first maturing in about 100 days; seeds rhomboid, black, about 6 by 6 mm. This has the general habit of Black 29292, but it is more vigorous, later, and not so prolific.

20980B. Very viny, very vigorous, the row mass 2 feet high, 4 feet broad; trailing branches moderate in number, averaging 4 feet in length, coarse; leaflets medium in size and color, held very late, immune to rust and but little affected by leaf-spot; flowers violet purple; not prolific; pods well filled, held medium high, purplish, 5 to 6 inches long, the first maturing in 1909 in about 130 days; seeds pinkish buff, rhomboid, about 6 by 6 mm.; iris brownish yellow. This is the most vigorous cowpea with buff-colored seeds that we have grown, and one of the most vigorous of all varieties. Its poor seeding habit and lateness, however, rendered it of little practical value.

20980C. Practically the same as 20980 except as to seeds, these being white with a medium-sized violet eye, the iris darker.

20980D. Very different from 20980. Plants very stout and vigorous, the row forming a mass 18 inches high, about 4 feet broad; trailing branches many; leaflets large, dark, purple; producing neither flowers nor pods at Arlington in 1908. Grown in the greenhouse, this breeds perfectly true. The seeds are subreniform, about 5 to 7 mm. long, with a large, irregular, violet eye, often extending over the micropylar end, and sometimes isolated spots of the same color; iris yellowish. This is the most vigorous of all the very late cowpeas that have been tested, exceeding in vigor even 21299.

20984. From Amani, German East Africa, May, 1907. This variety is distinguishable from New Era only in having much darker foliage and in being a little less tall. It might easily be mistaken for true New Era, but the characters mentioned have held true through three seasons.

21006. From Piracicaba, Sao Paulo, Brazil, May, 1907, under the name "Feijao macassar." According to Mr. W. Fischer, all varieties of cowpeas are called "macassar" in Brazil. Plants procumbent, very vigorous, very viny, the row mass 12 inches high, 4 to 5 feet broad; trailing branches many, 3 to 8 feet long; leaflets large, dark, not affected by rust or leaf-spot; flowers violet purple; not prolific; pods few, held low, none matured at Arlington in 1909 in 133 days, nor in 1908 in 140 days; pods grown in greenhouse from purplish to dark purple, 7 to 8 inches long; seeds varying from buff to violet, usually buff variously clouded with violet, subreniform, about 6 by 8 mm. This is one of the most vigorous of all varieties of cowpeas. Prof. S. M. Tracy states that in 1909 it was grown near Biloxi, Miss., by one of his neighbors and on account of the tremendous growth of the vines it was mowed off in July, after which it produced an unusually heavy crop of pods. This suggests the possibility of utilizing it as a soiling crop. In 1908 it matured pods at Auburn, Ala., but was not at all prolific. At Biloxi, Miss., in 1907, the vines were from 12 to 15 feet long; some of them ran on the ground for 10 feet and then climbed up bushes to a height of 12 to 15 feet or more. A second lot of the same variety is represented by No. 21299.

21006A. Seeds of this were mixed in 21006. They differed only in being thickly speckled with blue, the ground color varying from dark violet to nearly buff. The plants grown from these seeds were in no way distinguishable from those of 21006. The same variety occurred in 21299 and was separated as 21299A.

21049. *Whippoorwill.* From Fayetteville, Ark., June, 1907. See 17349.

21061. From Mr. James Moody, Village, Ark., June, 1907. Seeds maroon, rhomboid, 7 by 8 mm. No cultural notes.

21085. From Tchangyang, Manchuria, January, 1907. Low, half bushy, moderately vigorous, the row mass 12 inches high, 2 feet broad; trailing branches not many, 1 to 3 feet long; leaflets medium in size and color, not subject to rust, but much affected by leaf-spot; flowers pale violet purple; prolific; pods well filled, held rather low, straw colored, 5 to 7 inches long, the first mature in 75 days; seeds rhomboid, 6 by 8 mm., buff marbled with brown, the chalazal end sometimes white; iris yellow, closely similar to 17849, but distinct; not a valuable variety. The white-ended seeds sometimes occur on the same plant as those wholly marbled. In 17849, on the contrary, the two seed colors breed true.

21088. *New Era.* Seed from F. W. Bolgiano & Co., Washington, D. C. Plants erect, half bushy, moderately vigorous, the row mass 24 to 26 inches high, 30 inches broad; trailing branches rather few, 2 to 4 feet long; leaflets medium in size and color, immune to rust, but a little affected by both red and white leaf-spot; flowers violet purple; very prolific; pods well filled, held high, of a very pale straw color, nearly straight, 6 to 8 inches long, the first maturing in about 75 days; seeds rhomboid, about 7 by 7 mm., buff, thickly and quite evenly speckled with blue. This variety has also been grown under the following numbers: 13477, 18522, 26984, and 27547 from T. W. Wood & Sons, Richmond, Va.; 16229 from Mr. Herman Ockels, Bristol, Conn.; 0700 from Delaware College Agricultural Experiment Station; 0702 from Mr. W. S. O'Bier, Seaford, Del.; 0706 and 0815 from the Hickory Seed Co., Hickory, N. C.; 0726 from Mr. J. C. Little, Louisville, Ga.; 01016 from Mr. A. A. Milner, Chattanooga, Okla.; 01382 from the N. L. Willet Seed Co., Augusta, Ga.; 01383 from Barteldes & Co., Lawrence, Kans.; 01384 from George B. Matthews & Sons, New Orleans, La. New Era has also been received from Mr. L. W. Downs, Watkinsville, Ga., as "Downs Early Ripener" and grown under No. 17331. The identification of this variety, which has been more or less confused with Groit, has been confirmed by Mr. J. C. Little, who first named it New Era. The origin of the New Era cowpea is unknown, although it is certain that it is a variety of comparatively recent introduction. At least four other varieties in our collection have seeds like New Era. Two of these are from South Africa; the other two were obtained in this country. One of the African varieties, No. 20984, is extremely like New Era. The New Era cowpea has of late years become one of the important commercial cowpeas, being especially appreciated on acccount of its earliness, its erectness, and the rather small size of the seed. Occasionally it matures as far north as Connecticut, but this is unusual. It is somewhat inferior to Groit, which variety is likely to replace the New Era to a large extent. The pale color of the pods of New Era is a conspicuous feature which also characterizes all of its hybrids.

21292. Catjang. From Bombay, India, September, 1907, under the vernacular name "Lal-rawani." Erect, vigorous, the branch tips a little viny, the row mass 24 to 36 inches high, 2 feet broad; no trailing branches; stems fine; leaflets small, medium in color, affected by rust; no flowers in 1908 in 127 days nor in 1909 in 133 days; flowers on greenhouse plants nearly white; seeds buff, oblong, about 4 by 6 mm. Very similar to 21602, but smaller leaved and more subject to rust.

21292A. Catjang. This was mixed with 21292 and grown with it in 1909. Bushy, about 2 feet tall; leaves pale, so badly attacked by rust that several plants were killed; pods rather few, straw colored, 4 inches long, the first maturing in 100 days; seeds buff, oblong, 3 to 4 by 5 to 6 mm. A worthless variety, more badly injured by rust than any other.

21293. Catjang. From Pimjale Province, India, September, 1907, under the vernacular name "Rawan." Low, half bushy, moderately vigorous, the row mass 12 to 15 inches high, 2½ feet broad; trailing branches rather few, 1 to 3 feet long; leaflets medium in size and color, considerably affected by rust and by red leaf-spot; flowers pale violet purple; very prolific; pods well filled, held erect, straw colored, 4 to 5 inches long, the first maturing in about 80 days; seeds oblong, cream or pale buff, about 4 by 6 mm. This variety has been grown for several years. It is remarkably distinct, but not of much value.

21293A. Catjang. Mixed in the preceding. Procumbent, not vining, the row mass 12 to 14 inches high, 2 to 3 feet broad, rather sparse; trailing branches rather few, 1 to 2 feet long; leaflets dark, medium sized, much affected by rust and considerably by both red and white leaf spot; flowers pale violet purple; pods well filled, held erect, straw colored, 4 to 5 inches long, bursting and coiling readily, the first maturing in about 85 days; seeds small, oblong, pinkish buff, 4 by 6 mm. Grown three seasons; not prolific in 1908 but fairly so in 1909 and 1910. Not a valuable variety.

21293B. Catjang. Mixed in 21293. In size and habit exactly like 21293. The seeds, however, are white with a saddle of vinaceous cinnamon which sometimes extends over the micropylar end, oblong, about 4 by 6 mm. Grown for three seasons.

21293D. Catjang. Mixed in 21293. Procumbent, not vigorous, the trailing branches few, 1 to 3 feet long, not twining; row mass 10 to 14 inches high, 30 inches broad; leaflets dark, medium sized, held late, much subject to rust and a little to red leaf-spot; flowers almost white; quite prolific; pods well filled, held erect and fairly high, straw colored, 5 to 5½ inches long, thin, the first maturing in about 100 days; seeds oblong, small, about 4 by 6 mm., white with a large black saddle and occasional isolated spots. Grown three seasons; in appearance practically identical to 21293A with buff seeds. (See Pl. V.)

21294. Catjang. From Madras Province, India, September, 1907, under the vernacular name "Carramunny-pyre." Half bushy, suberect, the row mass 24 to 30 inches high, 2 feet broad, rather sparse; trailing branches reddish, few, 2 to 4 feet long; leaflets medium sized, considerably subject to both rust and leaf-spot; flowers violet purple; not prolific; pods well filled, held high, drab, 4 to 5 inches long, the first mature in about 100 days; seeds cream buff to ochraceous buff, oblong, 4 by 6 mm. Of good habit but susceptible to rust and not prolific enough.

21295. Catjang. From Pimjale Province, India, September, 1907. Suberect, bushy, moderately vigorous, the row mass 18 inches high, 2 feet broad; trailing branches medium in number, 1 to 3 feet long; leaflets medium in size and color, considerably affected both by rust and red leaf-spot; flowers almost white; prolific; pods well filled, held high, straw colored, 4 to 5 inches long, the first maturing in about 80 days; seeds white with a small buff eye, oblong, about 4 by 6 mm.

21295B. Catjang. Mixed in 21295. Procumbent, not viny nor vigorous, the row mass 10 to 14 inches high, 2 feet broad; trailing branches 1 to 3 feet long; leaves dark green, medium sized, much affected by rust; flowers violet purple; prolific; pods well filled, held erect or nearly so, straw colored, 4 to 5 inches long, the first maturing in 100 days; seeds 4 by 6 mm., marbled brown on buff. A very inferior variety.

21295C. Catjang. Plants procumbent, not twining, row mass 6 to 10 inches high, 12 to 18 inches broad, sparse; trailing branches few, 1 to 2 feet long; leaflets medium in size and color, much affected by rust, and somewhat by red leaf-spot; flowers violet purple; pods rather few, well filled, held medium high, straw colored, 4 to 5 inches long, the first maturing in 80 days; seeds dull black, oblong, about 4 by 6 mm. A very poor variety. In habit about the same as 21295G, which has marbled seeds.

21295D. Catjang. Identical in habit with 21295, differing apparently only in the seeds, these being white with a large eye or saddle of buff, which sometimes extends over the micropylar end, about 4 by 6 mm.

21295E. Catjang. This is very similar in all respects to 21293, and the seeds and pods are hardly distinguishable; the first pods mature in 75 days; grown for three seasons.

21295F. Catjang. Procumbent, weak, the trailing branches few, 1 to 3 feet long, not vining; row mass 10 to 15 inches high, 1 to 2 feet broad, thin and uneven; leaflets medium in size and color, narrow, quite angular, much subject to rust, and to red leaf-spot; flowers almost white; not prolific; pods well filled, held rather low, straw colored, 4 to 5 inches long, the first maturing in 80 days; seeds oblong, about 4 by 6 mm.; black and white, the black mostly about the eye, but often in one or two isolated spots. Grown two seasons; a variety of little value.

21295G. Catjang. Half bushy, not viny, weak, the row mass 10 to 12 inches high, 18 inches wide; trailing branches few, 1 to 3 feet long; leaves dark green, much affected by rust; flowers violet purple; prolific; pods well filled, held low, straw colored, 4 to 6 inches long, thin, the first maturing in about 80 days; seeds oblong, about 5 by 7 mm., brown marbled on buff. Earlier than and inferior to 21295B.

21296. Catjang. From Rangoon district, Burma, India, September, 1907, under the vernacular name "Chowlee." Plants procumbent, very viny, very vigorous, the row mass 22 inches high, 3 feet broad; trailing branches many, 6 feet long, green, rather coarse; leaflets large, pale, free from rust and leaf-spot; flowers almost white; very late, no pods maturing at Arlington in 133 days in 1909, nor in 129 days in 1908; original seeds reniform, variable in size, mostly 7 to 8 mm. long, white with a medium-buff eye. This is one of the most vigorous varieties of catjang tested. Its habit is such, however, as to make it of little value under American conditions.

21296A. Half bushy, very viny, the row mass 18 to 20 inches high, 2 to $2\frac{1}{2}$ feet broad; trailing branches many, 3 to 6 feet long; leaflets dark, medium sized, immune to rust and not much affected by leaf-spot; flowers violet purple; prolific; pods fawn colored, flattened, strongly curved, many into complete circles, 6 to 8 inches long, the first maturing in about 90 days; seeds pinkish buff, rhomboid, about 7 by 8 mm., rather strongly keeled. A curious but not valuable variety grown for two seasons. It seems to be identical with the variety described as *Dolichos bicontortus* Durien, and beautifully figured in the Flore des Serres (vol. 19, pl. 1985). Durieu's material came from Japan. (See Pl. VII.)

21296B. Low, half bushy, rather vigorous, the row mass 12 to 18 inches high, 3 to 4 feet broad; trailing branches many, 5 to 9 feet long; leaflets large, pale, immune to rust, little affected by leaf-spot; not blooming at Arlington either in 1908 or 1909; seeds 5 by 7 mm., white with a large buff saddle often extending over the micropylar end and scattered irregular spots on the back. This variety is too late to be of value. Is almost identical in habit with 21539B, which has closely similar seeds.

21296D. Plants bushy, 6 to 12 inches high; trailing branches rather few, 1 to 3 feet long; leaflets dark green, angular, much affected with rust; very late in blooming at Arlington Farm; seeds black, oblong, about 5 by 6 mm.

21297. From Pimjale Province, India, September, 1907, where it is said to be known under the vernacular names of "Lobia," "Rawan," and "Rawang." Medium tall, very viny, vigorous, the row mass 20 inches high, 3 feet broad; trailing branches green, many, 5 to 8 feet long; leaflets large, dark, somewhat subject to rust and to red leaf-spot; flowers pale, nearly white; moderately prolific; pods straw colored, 6 to 9 inches long, well filled, held rather low, the first maturing in about 90 days; seeds oblong, about 7 by 9 mm., white with a medium-sized black eye. A variety of ordinary merit, though subject to rust; the leaves were also much affected by chlorosis, many of them being nearly white.

21297A. Procumbent, weak, the row mass 6 to 10 inches high, thin, 1 to $1\frac{1}{2}$ feet broad; trailing branches not twining, few, 1 to 3 feet long; leaflets dark, medium sized, considerably affected by both rust and red leaf-spot; flowers violet purple; not prolific; pods well filled, held low, straw colored, 4 to $4\frac{1}{2}$ inches long, the first maturing in about 80 days, bursting readily when ripe and the valves curling; seed oblong, 5 to 6 by 7 to 8 mm. long, white, with a large black saddle which often extends over the micropylar end. Grown three seasons; an almost worthless variety.

21297B. Very similar to 21297 but not so good; leaves were free from rust; seeds similar but the eye smaller.

21297C. See 17855.

21297D. Catjang. Plants identical in every respect with 21297A; flowers white; seeds oblong, half crowder, buff, thickly speckled with blue like New Era, about 4 by 6 mm. Grown three seasons.

21297E. Catjang. Plants vigorous, the row mass 24 to 30 inches high, 3 feet broad; trailing branches many, 2 to 6 feet long, reddish; leaflets medium in size and color, considerably attacked by rust, and a little by red leaf-spot; flowers pale violet purple; not prolific; pods well filled, held medium high, straw colored, 4 to 6 inches long, the first maturing in about 100 days; seeds dull black, rhomboid, 5 by 6 mm. This is a very distinct variety. It was much attacked by rust in 1908, but entirely free from it in 1909. In 1909 it was a good deal better than 20980A grown alongside.

21299. From Piracicaba, Brazil, August, 1907. See 21006.

21299A. See 21006A.

21299B. Plants identical in every respect with 21299A. Seeds reniform, purplish buff to purple, speckled with blue, about 7 by 9 mm. (See Pl. IX.)

21508. Catjang. From the Botanic Garden, Tokyo, Japan, May, 1907. Perfectly erect, bushy; the row mass 12 to 18 inches high, 12 inches broad; trailing branches very few, 6 to 12 inches long; leaflets, medium in size and color, much affected by rust and by leaf-spot; flowers pale violet purple; moderately prolific; pods well filled, held high, pale, turning whitish before maturity but not becoming inflated, about 5 inches long; seeds black, rather dull, oblong, about 5 by 7 mm. This variety is interesting in that it is strictly erect and bushlike and the branches vine only a little at the tips. The pods have something of the character of the asparagus bean, but do not become inflated; the pod valves when dry are very thin and brittle. On account of its erectness, this variety possesses some promise for hybridizing and has thus been utilized. It has been grown four seasons. (See Pl. II.)

21509. From the Botanic Garden, Tokyo, Japan, May, 1907. Erect, bushy, not at all viny, medium vigorous, the row mass 18 to 24 inches high, 12 to 18 inches broad; no basal branches; leaflets medium in size, pale, rather angular, shed early, much subject to rust and considerably to leaf-spot; flowers pale violet purple; moderately prolific; pods held high, well filled, very thin valved, pale, 5 to 6 inches long, the first maturing in 85 days; seeds vinaceous cinnamon, about 5 by 7 mm. Remarkable for being not at all viny, in this respect like the preceding. The immature pods become pale like the asparagus bean but not inflated, though shrinking much when dry. The variety may have value for breeding on account of its erect vineless habit. It has been grown four seasons.

21509A. Suberect, half bushy, moderately vigorous, the row mass 18 inches high, 1 foot broad; trailing branches moderately coarse, 2 to 3 feet long; leaflets medium sized, free from rust, considerably affected by both red and white leaf-spot; flowers pale violet purple; prolific; pods well filled, held high, straw colored, 4 to 5½ inches long, the first maturing in about 75 days; seeds subreniform, 5 by 7 mm., buff; iris brownish yellow. A prolific variety of good habit with small pods.

21510. From the Botanic Garden, Tokyo, Japan, May, 1907. Very similar in habit to 21508; erect, with very slight tendency to vine; flowers white; pods as in 21508; seeds subreniform, 5 by 7 mm., white with a large black eye. All the remarks under 21508 apply also to this variety; grown four seasons.

21511. From Shanghai, China, June, 1907. Suberect, half bushy, scarcely viny, the row mass 24 inches high and about as broad; trailing branches green; leaves medium sized, free from rust, but much affected by red leaf-spot; flowers violet purple; prolific; pods well filled, held high, straw colored, 5½ to 8½ inches long, the first maturing in about 75 days, and all mature in 100 days; seeds black, subreniform, 6 by 8 mm. This is a prolific, fairly good variety, which closely resembles 16796, but is decidedly more erect and bushy and its branch tips twine but little. It is exactly matched by 25918, from Hangchow, China.

21535. Catjang. From Nagpur, Central Provinces, India, November, 1907, the vernacular name given as "Burbudi." Procumbent, viny, vigorous, the row mass 12 to 24 inches high, 3 to 3½ feet broad, rather sparse; trailing branches many, 3 to 4 feet long; leaflets medium sized, dark, much affected by rust and somewhat by leaf-spot; flowers almost white; pods few, straw colored, 4 to 5 inches long, the first maturing in about 120 days; seeds white, with a buff eye, oblong, about 4 by 6 mm.; iris darker. Grown three seasons.

21535A. Catjang. Suberect, viny, vigorous, the row mass 24 to 36 inches high and as broad but uneven; trailing branches 2 to 3 feet long; leaflets dark, medium sized, subject both to rust and leaf-spot; flowers pale violet purple; not prolific; pods well filled, held medium high, straw colored, 3½ to 4 inches long, the first maturing in 110 days; seeds buff to vinaceous cinnamon, oblong rhomboid, 3 by 5 to 4 by 6 mm.

21535B. Catjang. Procumbent, vigorous, very viny, the row mass 30 to 36 inches high, 3 to 4 feet broad; trailing branches many, 3 to 6 feet long; leaflets medium sized, dark, much affected by rust, little by leaf-spot; flowers almost white; pods few, straw colored, 3 to 5 inches long, the first maturing in about 120 days; seeds 4 by 5 mm., white with a large buff saddle which sometimes covers almost the entire seed; iris brown. This catjang is of no promise. It is practically identical in habit with 21535A, with buff seeds and 21535, with brown-eyed seeds. It may in fact be a hybrid between those two.

21536. Catjang. From the same source as 21535 and not distingushable from it.

21537. From Nagpur, Central Provinces, India, November, 1907, under the vernacular name "Jhunga." Procumbent to nearly prostrate, half bushy, very viny, not vigorous, the row mass 14 inches high, 18 inches broad; trailing branches many, 5 to 7 feet long; leaflets large, dark, considerably affected both by rust and leaf-spot; flowers almost white; not prolific; pods well filled, held rather low, straw colored, often purple tinged, 6 to 9 inches long, the first mature in 100 days; seeds oblong, half crowder, white with large black eye, about 6 by 8 mm. Grown three seasons; an undesirable variety. Several acres drilled in 1908 made a tangled mass of herbage 2 feet deep, not a single plant blooming.

21538. From Nagpur, Central Provinces, India, October, 1907, vernacular name "Jhunga." Procumbent, very viny, vigorous, the row mass 12 to 14 inches high, 4 feet broad; trailing branches many, 5 to 6 feet long; leaflets large, held late, free from rust and leaf-spot; flowers pale violet purple; no pods maturing in 1909 in 130 days; original seeds buff, variable, oblong to rhomboid, 5 to 6 by 7 to 8 mm.

21538A. This proved to be identical in every respect with 21539C.

21538B. Nearly, if not quite identical with 21539, both as to habit and seed characters.

21539. From Nagpur, Central Provinces, India, November, 1907, under the vernacular name "Khed jhunga." Procumbent, vigorous, very viny, the row mass 10 to 12 inches high, 3 to 4 feet broad; trailing branches few, 3 to 6 feet long; leaflets large, pale, much affected by rust, but without leaf-spot; not blooming at Arlington in 1909 in 130 days; original seed white with a large maroon saddle which commonly extends over the micropylar end, and usually a few scattered spots, subreniform, about 5 by 7 mm.

21539A. Procumbent, very viny, vigorous; the row mass 18 inches high, 36 inches broad; trailing branches many, 6 feet long, coarse; leaflets medium in size and color, little affected by rust and leaf-spot; flowers pale violet purple; pods few, scarcely maturing in 1909 in 133 days, about 6 inches long; original seeds maroon, subreniform, varying in size from 4 by 6 mm. to 6 by 7 mm.

21539B. Procumbent, moderately vigorous, the row mass 1 foot high, 5 to 6 feet broad; trailing branches 3 to 6 feet long, green, not coarse; leaflets large, pale, much affected by rust, apparently free from leaf-spot; flowers pale violet purple; pods few, none ripening in 131 days; seeds oblong, mostly 6 to 7 mm. long, the ground color white, with maroon covering the micropylar end and more or less of the chalazal end, the back remaining white; iris black. Too prostrate as well as too late to be of much value.

21539C. From Nagpur, Central Provinces, India. Procumbent, very viny, vigorous, the row mass 10 inches high, 2 feet broad; trailing branches rather many, 4 to 5 feet long, green, medium coarse; leaflets medium in size and color, much affected by rust, little subject to leaf-spot; flowers pale violet purple; no pods ripening at Arlington in 1909 in 132 days; seeds oblong, about 4 to 6 mm., white with a medium brown eye, the edges not sharply defined. None of this 21539 series is of high value under American conditions except for green manuring. A large field of 21539 planted in 1908 made a dense, tangled mass of vines 2 feet deep, but no pods matured.

21558. Asparagus bean. From Buitenzorg, Java, November, 1907. Vernacular name, "Katjang pandjang." Plants procumbent, very viny, the row forming a mass 8 to 12 inches high, 18 to 24 inches broad; trailing branches rather few, 3 to 9 feet long; leaves apparently immune to rust, and but little affected by leaf-spot; flowers pale violet purple; prolific; pods pale, moderately inflated, 10 to 20 inches long, the first maturing in about 70 days; seeds 5 by 10 to 12 mm., brick red, longitudinally striate.

21559. Asparagus bean. From Buitenzorg, Java, November, 1907. Vernacular name, "Katjang dadap." In growth and general appearance this can scarcely be distinguished from the preceding; the seeds, however, are different, buff with longitudinal striæ, 6 by 9 mm. Intermixed were four other varieties of practically identical appearance; 21559A, seeds reddish buff, striate, 5 by 10 mm.; 21559B, with similar seeds, 5 by 7 mm., nonstriate; 21559C, with smooth, buff seeds, 6 by 11 mm.; and 21559D, with smooth, buff seeds, 5 by 9 mm.

21559C. In habit and pod characters this is like 22746. Seeds reniform, 5 by 10 mm.

21560. From Buitenzorg, Java, November, 1907. Vernacular name, "Katjang belaet." This proved to be indistinguishable from 21558.

21561. From Buitenzorg, Java, November, 1907, under the name "Katjang dadap." Very procumbent, very viny, moderately vigorous, the row mass 10 inches high, 2 feet broad; trailing branches slender, 2 to 4 feet long; leaflets medium sized, free from rust, a little affected by both red and white leaf-spot; flowers violet purple; prolific; pods well filled, held low, 12 to 15 inches long, straw colored, not at all inflated but the valves thin, the first maturing in 72 days; seeds 5 by 8 mm., dark vinaceous. This variety is very similar to 22746, and is intermediate in botanical characters between the asparagus bean and the cowpea.

21562. Asparagus bean. From Buitenzorg, Java, November, 1907. Vernacular name "Katjang dadap." Plant procumbent, very viny, the row forming a mass 10 to 12 inches high and 2 to 3 feet broad; trailing branches few, 2 to 7 feet long; leaves a little affected by both rust and white leaf-spot; flowers violet purple; quite prolific; pods pale, spongy but not much inflated, 12 to 18 inches long, the first maturing in about 80 days; seeds 6 by 10 mm., buff, thickly marbled with brown.

21563. Catjang. From Buitenzorg, Java, November, 1907. Vernacular name "Katjang roedji." Procumbent, very viny, vigorous, the row mass 16 to 24 inches high, 3 to 4 feet broad; trailing branches many, 5 to 10 feet long; leaflets large, medium dark, free from rust but somewhat subject to white leaf-spot; flowers very pale violet purple; pods straw colored, 5 to 6 inches long, the first maturing in about 120 days; seeds vinaceous cinnamon, rhomboid, about 5 by 6 mm. Grown three seasons; a more vigorous variety than Red Ripper 17350, but too late and viny.

21564. Catjang. From Buitenzorg, Java, November, 1907, as "Katjang roedji." Vigorous, viny, the row mass 14 to 20 inches high, 4 to 5 feet broad; rather sparse; trailing branches many, 3 to 6 feet long; leaflets medium sized, immune to rust and but slightly subject to leaf-spot, held late; flowers violet purple; pods few, well filled, held rather low, straw colored, 4 to 6 inches long, the first maturing in 105 days; seeds pinkish buff, oblong, 4 by 6 mm. A good procumbent sort, but not fruitful enough. Different from the preceding.

21565. Catjang. From Buitenzorg, Java, November, 1907, as "Katjang landes." Very procumbent, viny, the row mass very dense, 12 to 14 inches high, 3 to 4 feet broad; trailing branches many, 3 to 5 feet long; leaflets dark, small, angular, thickish, free from rust and not much affected by leaf-spot; flowers violet purple; pods very numerous, held erect, drab, 4 to 4½ inches long, bursting and coiling readily, the first maturing in about 100 days; seeds vinaceous buff, oblong, about 4 by 6 mm. A very distinct variety but of small value.

21565A. Catjang. Procumbent, moderately vigorous, the row mass 8 to 15 inches high, 2½ to 3 or even 4 feet broad; trailing branches many, 1 to 3 feet long, fine; leaflets small, dark, very angular, immune to rust but considerably affected by red leaf-spot; flowers white; very prolific; pods well filled, held erect, drab colored, 3 to 4 inches long, the first maturing in about 100 days; seeds white with a small buff eye, oblong, about 3 by 5 mm. A remarkable variety of catjang or perhaps a distinct species, forming a compact, low mass covered with numerous erect peduncles and pods. Of no agricultural promise. Other varieties somewhat similar to this are 21565 and 21934.

21568. Asparagus bean. From Buitenzorg, Java, November, 1907. Vernacular name "Katjang belaet." Very similar in habit and appearance to 21562, but a little later, the first pods maturing in about 90 days; pods much inflated; seeds colored like 21562 but a little more elongate, 5 by 10 to 12 mm.

21568B. Asparagus bean, a variety found mixed with 21568, differing only in having seeds white at the chalazal end.

21569. Asparagus bean. From Buitenzorg, Java, November, 1907. Vernacular name "Katjang dadap." Plants procumbent, very viny, the row forming a tangled mass 12 to 18 inches high, 2 to 3 feet wide; trailing branches 3 to 8 feet long; leaflets dark, entirely free from rust and but little affected by leaf-spot; flowers violet purple; prolific; pods pale, 8 to 12 inches long, much inflated, the first maturing in about 80 days; seeds 5 to 6 by 8 to 9 mm., buff, more or less thickly spotted and marbled with brown. One of the best varieties of asparagus bean.

21569A. In habit and pod characters like 22746. Seeds 6 by 9 to 10 mm., pinkish buff, marbled and spotted with brown.

21569B. This differs from 22746 only in the color of the seeds, which are pinkish buff without spots.

21599. *Brabham.* From Mr. A. W. Brabham, Olar, S. C., November, 1907. Tall, half bushy, the branch tips viny, very vigorous, the row mass 30 to 36 inches high, 3 to 4 feet broad; trailing branches numerous, 3 to 7 feet long; leaves held late, medium in size and color, immune to rust, a little affected by red leaf-spot; flowers violet-purple; very prolific; pods held high, well filled, straw colored, 6 to 7 inches long, the first maturing in 100 days; seeds rhomboid, buff, marbled with brown, 6 by 7 mm. This variety originated with Mr. A. W. Brabham, of Olar, S. C., as a natural hybrid between Iron and Whippoorwill. It partakes of the characters of both parents, having the tall habit and prolificness of Whippoorwill, and the same resistance to wilt and root-knot and ability to hold its leaves late as the Iron. The only serious fault of this variety is the tendency of the viny tips to go largely to vine in moist seasons or on rich ground. Thus in 1907 and 1909 it produced but little seed though the vines were very large. Near Stockton, Cal., during the season of 1910 it made an enormous growth, but did not set a blossom, while Blackeye alongside fruited abundantly. Similar instances might be cited. Its enormous vegetative vigor requires to be checked by poor soil or drought before it will fruit abundantly. For the sandy lands of the South, especially where wilt and root-knot prevail, its high value is beyond question. About Brunson, S. C., this variety is called Speckled Rio. Indistinguishable from Brabham is 01510, received from Mr. S. M. Bailey, Jennings, S. C. Nos. 24414 and 26407 are lots grown from 21599.

21602. Catjang. From Nadiad, India, November, 1907, as Chavali. Erect, vigorous, tips of the branches vining, the row mass 30 to 40 inches high, 3 feet broad; no trailing branches; leaflets medium sized, pale, a little affected by rust and leaf-spot; did not bloom in 1908 in 123 days, nor in 1909 in 133 days, nor at Monetta, S. C., in 1909 in 120 days; seeds buff, oblong, about 4 by 6 mm. Nos. 21602, 21292, and 22759, while different varieties, all have about the same habit, being more treelike in growth than any other catjang or any cowpea. Attempts are being made to combine this excellent habit of these varieties with greater earliness and fruitfulness. Agrostology No. 1488, from the Hawkesbury Agricultural College, New South Wales, under the name Upright, tested in 1907, is closely similar. Compare 21934.

21603. From Katargam district, Surat, India, November, 1907. Vernacular name "Chola." Vigorous, viny, the row mass 24 to 30 inches high, 3 to 4 feet broad; trailing branches 3 to 6 feet long; leaflets medium in size and color, free from rust, a little subject to white leaf-spot, held late; flowers violet purple; pods few, held rather low, not well filled, drab, 4 to 6 inches long, the first maturing in 110 days; seeds pinkish buff, subreniform, about 5 by 7 mm. A large field of this planted in 1908 made a tangled mass 30 inches deep that was difficult to plow under. It is not so good as 21564.

21603A. Catjang. Very procumbent, viny, medium vigorous, the row mass 10 to 12 inches high, 3 to 4 feet broad; branches green, medium in number, 3 to 6 feet long; leaflets medium in size and color, held late, free from rust but subject to red leaf-spot; flowers pale violet purple; pods few, held low, straw colored, torulose, about 5 inches long, the first maturing in 101 days; seeds pink, about 4 by 6 mm. A nearly worthless variety; the leaves were badly affected by chlorosis; grown two seasons.

21603B. Catjang. Procumbent, very viny, moderately vigorous, the row mass 12 to 16 inches high, 4 feet broad, sparse; trailing branches 3 to 5 feet long; leaves medium in size and color, not affected by rust and but little by leaf-spot; flowers violet purple; pods few, spreading, held low, drab in color, 5 to 6 inches long, the first maturing in about 85 days; seeds oblong, 5 by 7 mm., marbled brown on buff, much as in Whippoorwill. The above notes are for 1909. In 1910 the plants were much more bushy and erect, the row mass 2 feet high and 3 feet broad, the first pods maturing in about 100 days. (See Pl. V.)

21791. Asparagus bean. From Sibpur, Calcutta, India, January, 1908, as "Lobia." No cultural notes; original seeds reniform, reddish, 5 by 10 mm.

21792. From Sibpur, Calcutta, India, January, 1908. Procumbent, very viny, vigorous, the row mass 16 to 18 inches high, 3 to 4 feet broad; trailing branches many, slender, 3 to 6 feet long; leaflets of medium size and color, free from rust and leaf-spot; flowers violet purple; in 1909 no pods matured 130 days after planting; pods grown in greenhouse straw colored tinged with purple, 6 to 7 inches long, slender, 8 mm. wide; seeds vinaceous, oblong, about 5 by 6 mm. Very late and viny besides being a shy bearer; grown only one season.

21793. From Sibpur, Calcutta, India, January, 1908. Seed of this planted at Arlington Farm did not grow. At Monetta, S. C., the plants were moderately vigorous, perfectly prostrate, with trailing branches 4 to 6 feet long; leaflets medium in size and color, not affected by rust and but little by leaf-spot; planted June 8, 1909, they had neither flowers nor pods on September 7; original seeds subreniform, plump, usually transversely wrinkled, about 7 mm. long, white with a dark-brown or perhaps maroon eye. The habits are such as to make the variety worthless.

21813. From Makassar, Celebes, January, 1908. Stems and branches prostrate or nearly so, 4 to 8 feet long, the row mass thin, 6 to 12 inches high, 4 to 6 feet broad; leaflets large, pale, free from leaf-spot but subject to rust; very late, not even producing buds or flowers at Arlington Farm in 130 days in 1908 or in 1909; at Monetta, S. C., in 1909, its behavior was very similar; original seeds subreniform, white or cream colored with a brown iris, mostly about 6 by 8 mm. Of striking habit and appearance but of no apparent value.

21814. From Makassar, Celebes, January, 1908. Similar in all respects to 21813, excepting as to seeds. The original seeds are subreniform, variable in size, mostly about 5 by 7 mm., buff, marbled with brown as in Whippoorwill.

21815. From Makassar, Celebes, January, 1908. Similar in all respects to 21813, excepting as to the seed. The original seeds were subreniform, about 5 by 7 mm., white, mostly with a black eye, but some with a black saddle.

21816. From Makassar, Celebes, January, 1908. This variety is identical in habit with 21813, differing only in the seeds, which are oblong, half crowder, about 6 by 8 mm., buff colored, the chalazal end frequently white.

21817. This is similar in every way to 21813, excepting as to seeds. The original seeds are subreniform, about 5 by 8 mm., black. The five preceding varieties were grown two seasons and are remarkable for their very prostrate habit, the branches all lying flat on the ground. Except for the seeds they could not be distinguished from each other.

21832. *Iron.* From the N. L. Willet Seed Co., Augusta, Ga., January, 1908. See 8418.

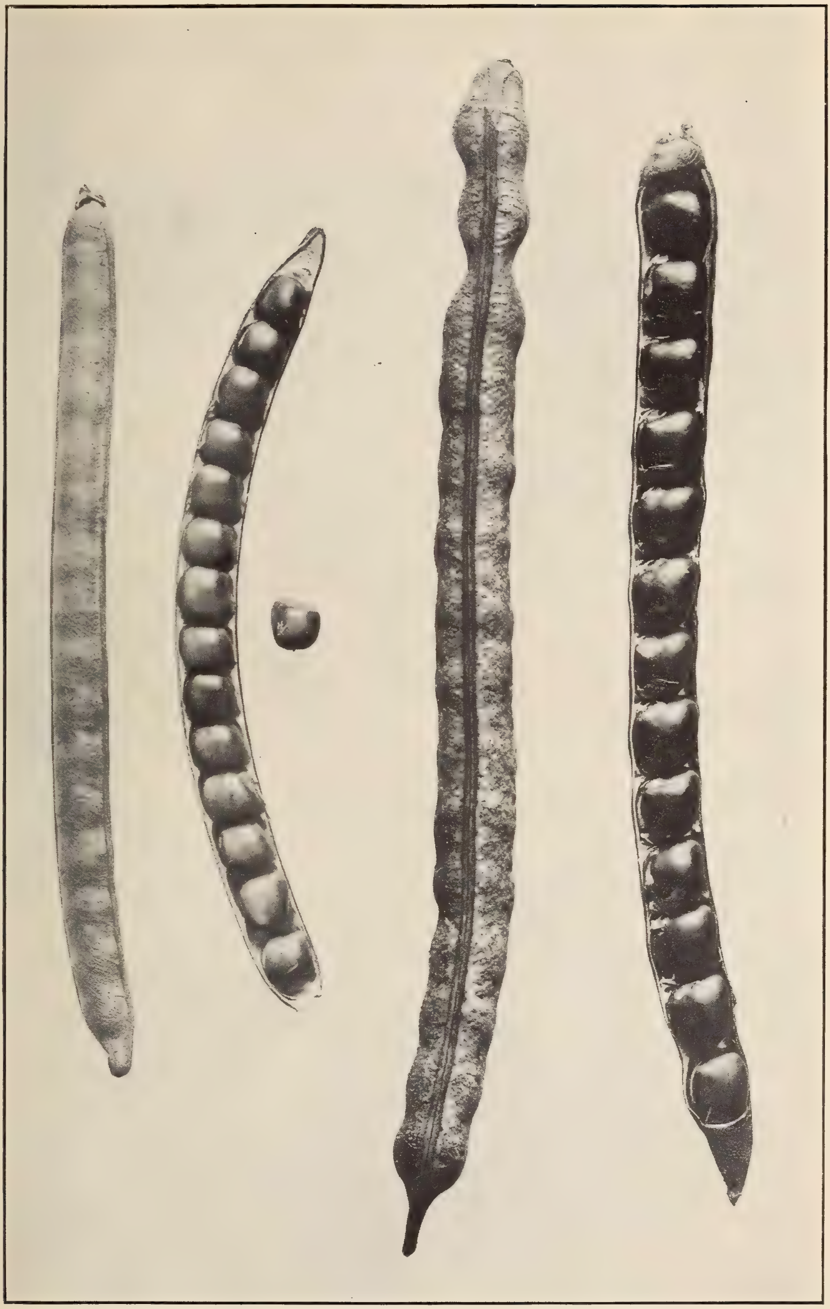
21934. Catjang. From Sydney, N. S. W., as "Upright," originally from India. Half bushy, vigorous, the row mass 12 to 20 inches high, 3 feet broad; trailing branches 2 to 3 feet long; leaflets small, dark, held late, free from rust but subject to red leaf-spot; pods very numerous, held erect, drab colored, small, 4 inches long, the first maturing in 100 days; seeds oblong, buff, 4 by 5 mm. Isolated plants form circular compact masses almost covered with the erect pods. Under this name a variety is now commercial in New South Wales, but as represented by this lot it does not have much value under Arlington conditions. It has the same general appearance as 17376, 21565, and 21565A, but is taller and better than any of those. No. 21934 is very different from Agrostology No. 1488, received from the Hawkesbury Agricultural College, N. S. W., in 1902 as Upright. The latter is erect in habit and very much like 21602, if not identical with it. (See Pl. V.)

22050. *Turney's Blackeye.* From Amarillo, Tex., Experimental Farm, 1908, originally procured from Mr. Turney, Channing, Tex. Very similar to Early Blackeye 17335, if not identical with it. In 1909, at Arlington Farm, it matured with that variety, but in 1910 was 10 days earlier. It has been grown with marked success at Amarillo, Dalhart, and Chillicothe, all in the northern portion of Texas. Under conditions where other varieties produce scarcely any pods, it possesses the remarkable ability to produce good crops of seed. This was especially marked at Chillicothe in 1910, where in a season of extreme drought this variety produced a crop of seed, while a number of other varieties, including Whippoorwill, Brabham, Groit, and Iron, produced few or no pods. No. 25857, from Venice, Italy, was indistinguishable from No. 22050 as grown at Arlington Farm in 1910, as were also the following lots: 0423A and 0618A, from Mr. J. W. Trinkle, Madison, Ind.; 01006, from Mr. C. M. Thompson, Bernice, La.; and 01007, from Mr. Burr Osborn, Arthur, Okla.

22051. *Speckled Crowder.* From Mr. J. B. Brewer, Tazewell, S. C., 1907. Plants low, half bushy, the row mass 12 inches high, 3 to 4 feet broad, thin; prostrate branches, coarse, 3 to 5 feet long, not numerous; leaflets large, dark, immune to rust, a little affected by both red and white leaf-spot; flowers violet purple; prolific; pods well filled, held low, purplish tinged, 7 to 8 inches long, the first maturing in about 90 days; seeds globose, about 8 mm. in diameter, buff speckled with blue, the blue specks arranged in groups. This variety is very similar to Taylor in all respects excepting as to the crowder character. No. 0565, a Speckled Crowder from Mr. J. W. Trinkle, Madison, Ind., is somewhat taller and otherwise superior to 22051. It is matched by 01008, from Mr. J. P. Mason Ordsburg, Va.

22052. *Black Crowder.* From Mr. Simeon Fippin, Cookeville, Tenn., 1907. Half bushy, somewhat procumbent, moderately vigorous, the row mass 10 to 14 inches high, 2 to 3 feet broad; trailing branches coarse, mostly lying on the ground, 1 to 3 feet long; leaves medium sized, shed rather early, free from rust, but considerably affected by red and white leaf-spot; flowers violet purple; moderately prolific; peduncles stout, erect; pods well filled, held medium high, straw colored or purplish, slightly torulose, 6 to 7 inches long, the first maturing in about 90 days; seeds subglobose, somewhat compressed, about 8 mm. in diameter. Practically indistinguishable from this are the following lots: 0911, 01480, 01487, from Mr. J. W. Trinkle, Madison, Ind.; and 01027, from Mr. D. F. May, Buckeye, Ark. Different only in being a week earlier is 0802, from Mr. George M. Simms, Canyon, Tex., and 17372, from Cairo, Ga., as Wight Black Crowder. (See Pls. V and X.)

22053. From Mr. T. M. Marshall, Walnut Cove, N. C., 1907. Vigorous, viny, the row mass 22 inches high, 3 feet broad; trailing branches medium in number, 4 to 6 feet long; leaflets large, dark, immune to rust, but somewhat affected by white leaf-spot; flowers pale violet purple; moderately prolific; pods well filled, held medium low, straw colored, 6 to 7 inches long, the first maturing in about 100 days; seeds buff pink, subglobose, strongly keeled, 7 by 8 mm. This variety was grown for four seasons and is very similar to Michigan Favorite, but the plants are larger and taller.



PODS OF TWO CROWDER VARIETIES OF COWPEAS: NO. 29285 ON LEFT, NO. 0802 (SIMILAR TO NO. 22052) ON RIGHT.

(Two-thirds natural size.)

22054. *Volunteer.* Grown by Mr. J. P. Hogan, Robinsonville, Miss., and presented to the Department of Agriculture by Mr. Joseph Vaulx, Nashville, Tenn., who writes as follows:

> This pea has been grown near the mouth of the Arkansas River in Arkansas and across the Mississippi for at least forty years, having volunteered from year to year in all that time. It is apparently very prolific.

Very viny, vigorous, the row mass 28 inches high and 3 feet broad; trailing branches many, 4 to 6 feet long, fine; leaflets dark, medium sized, held late, immune to rust and but little affected by leaf-spot; flowers violet purple; not very prolific; pods well filled, held rather high, straw colored, 6 to 7 inches long, the first maturing in about 110 days; seeds pinkish buff, subreniform, about 5 by 7 mm. Indistinguishable from this is 25512, Wild Louisiana cowpea from the J. Steckler Seed Co., New Orleans, La. At Monetta, S. C., this variety matured pods in 1909 in 90 days, but otherwise closely resembled the plant as grown at Arlington Farm. This variety is one of the most vigorous of cowpeas, and of good habit, the principal objection to it being the small number of pods that it bears. In general habit, it is similar to Iron. It has been grown three seasons.

22055. *Volunteering Iron.* Seed from volunteer plants of Iron at Arlington Farm where this variety has volunteered abundantly since 1904. Attempts to increase this tendency have not been successful. In no case has a full stand resulted from fall sowing, either when the seed was allowed to scatter naturally or when planted. It is the only cowpea that volunteers abundantly at Arlington Farm.

22382. From Canton, Kwangtung, China, March, 1908. Procumbent, very viny, vigorous, the row mass 16 inches high, 30 inches broad; trailing branches green, many, 3 to 6 feet long; leaflets large, pale, not affected by rust, but a little subject to leaf-spot; flower color not noted; pods very few, being barely matured when killed by frost in 133 days, straw colored, 6 to 8 inches long; seeds subreniform, about 6 by 8 mm., white with medium black eye, somewhat wrinkled. A very distinct late variety. The internodes are long so that the leaves seem sparse.

22391. From Manila, P. I., March, 1908, the original seed said to be from Venezuela. This proved identical with Iron. See 8418.

22408. From Hongkong, Kwangtung, China, March, 1908. Plants, vigorous, medium, half bushy, the row mass 22 inches high, 3 feet broad; trailing branches many, 5 to 6 feet long; leaflets dark, medium sized, considerably subject to rust and a little to red leaf-spot; flowers almost white; prolific; pods well filled, held high, straw colored or somewhat purplish tinged, 6 to 7 inches long, the first maturing in about 100 days; seeds white with a buff eye, subreniform, about 5 by 7 mm. A very prolific, but rather late, variety of excellent habit, but subject to rust.

22539. From Chefoo, Shantung, China, April, 1908. See 23307.

22635. *Chinese Red.* From Sheklung, Kwangtung, China, April, 1908. Low, half bushy, very viny, the row mass 18 inches high, 30 inches broad; trailing branches 3 to 4 feet long; leaflets dark, small, shed early, extremely subject to rust, free from leaf-spot; flowers violet purple; not very prolific; pods well filled, held medium high, straw colored, 6 to 7 inches long, the first maturing in about 75 days; seeds subreniform, vinaceous rufous, 5 by 8 mm. Very similar to 17328, the seeds being identical. Habit fairly good, but too much subject to rust; grown two seasons.

22647. From Hangchow, Chekiang, China, April, 1908. See 16796.

22648. Asparagus bean. From Hangchow, Chekiang, China, April, 1908. Similar to 22902. So badly affected by rust that many of the plants succumbed; pods pale, moderately inflated, 10 to 15 inches long, the first maturing in about 70 days; seeds walnut brown, 4 to 6 by 7 to 9 mm.; iris nearly black.

22648A. Asparagus bean. Intermixed in the above and distinguishable only by the color of the seeds which are pinkish buff.

22715. From Prof. C. L. Newman, Clemson College, S. C., April, 1908; his No. 2, a hybrid between Blackeye and Taylor. In habit and general appearance this is practically identical with 17363; the pods are straw colored, some of them slightly purplish tinged, 7 to 8 inches long ,the first maturing in about 90 days; seeds white with a large saddle of the Taylor color that nearly always extends over the micropylar end and usually with scattered spots of the same color on the back; iris nearly black. Practically identical with this is 22717, Prof. Newman's No. 9, a cross between California Blackeye and Taylor; and 22726, Prof. Newman's No. 50, Taylor × Large White-Spot.

22716. Newman No. 4. From same source as 22715, said to be a hybrid between Blackeye (perhaps an error for Black) and Extra Early Blackeye. See 17427.

22717. Newman No. 9. See 22715.

22718. Newman No. 12. See 17427.

22718B. Selection of 22718 in 1908, probably an extracted hybrid. A very vigorous vining variety, somewhat procumbent, the row mass 2½ feet high and as broad; trailing branches green, 3 to 5 feet long; leaflets medium sized, free from rust, a little affected by red leaf-spot; flowers pale violet purple; prolific; pods well filled, held high, straw colored, 6 to 7 inches long, the first maturing in about 85 days; seeds black, subreniform, 5 to 6 by 9 mm. This is one of the most vigorous of all the Black varieties grown. It is very similar to 27549, but better. No. 0630, from Mr. J. W. Trinkle, Madison, Ind., is not distinguishable from this.

22719. Newman No. 10. See 17427.

22720. Newman No. 13. See 17327.

22721. Newman No. 16. See 17427. (See Pl. V.)

22722. From Prof. C. L. Newman, April, 1908; his No. 26. Half bushy, viny, vigorous, the row mass 18 inches high, 2 feet broad; branches few, coarse, about 3 feet long; leaves free from rust, much affected by leaf-spot; flowers violet purple; prolific; pods well filled, held medium high, straw colored, 8 to 14 inches long, the first maturing in about 95 days; seeds purplish maroon, subreniform, 7 by 9 to 11 mm. This has larger pods and seeds than any other variety with maroon seeds grown. Otherwise, it is very like 17350.

22723. From Prof. C. L. Newman, April, 1908; his No. 27, said to be a selection from Clay. This is very similar in habit and maturity to 17340, but has different pods and seeds. Pods purplish tinged, 6½ to 8 inches long; seeds rhomboid, buff, 6 by 7 mm., the iris yellow.

22724. *Clay Self-Seeding.*—From Prof. C. L. Newman; his No. 28, April, 1908. Vigorous, very viny, the row mass 24 inches high, 3 feet broad; trailing branches many, 4 to 5 feet long; leaflets medium in size, pale, held low, immune to rust, little affected by leaf-spot; flowers pale violet purple; pods rather few, well filled, held medium high, straw colored, 6 to 8 inches long, the first maturing in about 100 days; seeds pinkish buff, subreniform, rather strongly keeled, about 7 to 8 mm.; iris brown. This variety is similar to 22054, but earlier and otherwise different.

22725. Newman No. 43. See 17327 and Plate V.

22726. Newman No. 50. See 22715.

22727. From Prof. C. L. Newman, April, 1908; his No. 51, a cross between Taylor and Browneye. Suberect, half bushy, moderately vigorous, the row mass 16 inches high, 18 inches broad; trailing branches few, short; leaflets medium sized, shed early, free from rust, but much subject to red leaf-spot and somewhat to white leaf-spot; flowers pale violet purple; prolific; pods well filled, held medium high, straw colored, 6 to 8 inches long, rather broad, the first maturing in about 75 days; seeds 7 by 10 mm., white with a very small eye colored as in Taylor—that is, buff with small blue speckings; iris black. This variety has quite the same habit as Taylor and is about of equal value.

22728. From Prof. C. L. Newman, April, 1908; his No. 53, said to be a hybrid between Warren's New Hybrid and Lady. Rather low, half bushy, vigorous, the row mass 12 to 30 inches high, 3 to 3½ feet wide; trailing branches many, twining, 2 to 5 feet long, fine; leaflets medium in size and color, not affected by rust and but little by leaf-spot; flowers almost white; pods few, held low, straw colored, 6 to 7 inches long, the first maturing in about 120 days; seeds white or yellowish white with a large saddle of buff, the saddle sometimes extending over the micropylar end, and often a few isolated spots of buff on the back; iris, olive, or yellow. Grown two seasons; not a desirable variety.

22729. Newman No. 57. See 17422.

22730. Newman No. 64. See 17408.

22746. From Buitenzorg, Java, April, 1908. Plant procumbent, very viny, the row forming a mass 12 to 18 inches high, 2 to 3 feet broad; branches 2 to 4 feet long; leaflets dark, apparently immune to rust and leaf-spot; flowers violet purple, moderately prolific; pods 7 to 10 inches long, narrow, not becoming pale or inflated, strongly falcate, rather thin, the first ripening in about 75 days; seeds reniform, 6 by 9 mm., dark vinaceous marbled with brown. This resembles the asparagus bean in the shape of the seeds and the length and slenderness of the pods. The pods, however, have the firm character of the cowpea pod and not the spongy texture of the asparagus bean pod. The plants are taller and decidedly less procumbent than the asparagus bean. It is quite likely that this variety is of hybrid origin, one parent being an asparagus bean and the other a cowpea. Following are a number of other varieties from Buitenzorg which have quite the same habit and pods as

22746 but differ mainly in the color of the seeds: 22747A, pink-red; 22747B, buff; 22747C, marbled; 22747D, marbled with the chalazal end white; 22747E and 22747G, buff with the chalazal end white; 21559C, buff; 21559D, buff; 21561, pink-red; 21569A, marbled; 21569B, buff. (See Pl. X.)

22747. Asparagus bean. From Buitenzorg, Java, April, 1908. Plant procumbent, viny, the row forming a mass 10 to 12 inches high, 2 to 3 feet broad; branches 1 to 5 feet long; leaflets little affected by rust and leaf-spot; flowers pale violet purple; prolific; pods pale, much inflated, 8 to 12 inches long, the first maturing in about 70 days; seeds 5 by 9 mm., spotted and marbled with brown. Everything considered, this is probably the best of all the true asparagus beans.

22747A. Habit and pod characters essentially the same as 22746. Seeds 5 to 6 by 8 to 9 mm., vinaceous to vinaceous buff.

22747B. Procumbent, viny, weak, the row mass thin, 12 to 14 inches high, 3 feet broad; trailing branches green, slender, 3 feet long; leaflets dark green, medium sized, shed early, free from rust, much affected by white leaf-spot; flowers violet purple; moderately prolific; pods medium well filled, held low, not inflated, straw colored, 7 to 10 inches long, the first maturing in about 75 days; seeds buff, subreniform, 5 by 8 mm. A poor variety.

22747C. This differs from 22746 only in the seed character. Seeds 6 by 9 mm., vinaceous cinnamon marbled with brown.

22747D. Habits identical with 22746. Seeds 5 by 9 mm., vinaceous cinnamon marbled with brown, the chalazal end white.

22747E. Different from 22746 only in the seeds. Seeds 6 by 8 mm., buff with a white wedge-shaped area at the chalazal end.

22747G. Asparagus bean. Found mixed in 22747 and of essentially the same habit; seeds 6 by 9 mm., buff marked with darker longitudinal striæ, the chalazal end white.

22758. Catjang. From Dharwar District, Bombay, India, April, 1908. Rather tall, half bushy, vigorous, the row mass 24 to 30 inches high, 3 to 4 feet broad; trailing branches rather few, 2 to 3 feet long; leaflets medium sized, pale, not affected by rust, little affected by leaf-spot; not blooming at Arlington Farm in 1909 in 133 days nor at Monetta, S. C., in 114 days; seeds plump, oblong, white with a large buff eye, about 4 by 6 mm. This catjang has a good habit, but is entirely too late to be of much value.

22759. Catjang. From Surat, India, April, 1908. This variety is nearly identical with 21602, but is apparently immune to rust; grown for three seasons.

22760. From Surat, India, April, 1908. Plant procumbent, viny, vigorous, the row mass 12 to 24 inches high, 3 to 5 feet broad, but erect; branches few, 2 to 6 feet long, coarse; leaflets large, medium green, free from rust but considerably affected by leaf-spot; flowers nearly white; pods few, medium well filled, the first maturing in about 120 days; seeds subreniform, some finely cross wrinkled, 5 to 7 mm. long, white with a small to medium-sized buff eye. In 1908 a large quantity of this seed was sown broadcast on June 22, and made a very tangled mass of vines about 18 inches deep. At Monetta, S. C., in 1909, it was almost completely destroyed by wilt and did not form blossoms.

22887. Asparagus bean. From Swatow, Kwangtung, China, May, 1908. Plants procumbent, very viny, vigorous, the row forming a mass 14 inches high, 2 to 3 feet broad; branches 3 to 5 feet long; leaflets large, apparently not subject to rust; flowers nearly white; not very prolific; pods much inflated, pale, 8 to 12 inches long, the first maturing in about 100 days; seeds white, red about hilum, this color usually extending over the micropylar end, 5 by 9 mm. A vigorous late variety.

22888. Catjang. From Swatow, Kwangtung, China, May, 1908. Not vigorous nor viny, the row mass 10 to 14 inches high, 12 to 18 inches broad; branches few, 1 to 3 feet long; leaflets medium in size and color, much affected by rust and leaf-spot; flowers violet purple; prolific; pods well filled, held medium high, straw colored, 4 to 5 inches long, the first maturing in 80 days; seeds pinkish buff to ochraceous buff, oblong, 4 by 6 mm. This is similar in all respects to 21295E and 21293A, but is better than either. One of the best of the early catjangs but too subject to rust. (See Pl. VI.)

22902. Asparagus bean. From Paoting, Chihli, China. Chinese name "Tsai don." Plant procumbent, very viny, the row forming a mass 12 inches high, 18 inches broad; branches few, 1 to 3 feet long; leaflets dark, very much affected with rust; flowers pale violet purple; not very prolific; pods pale, much inflated, 6 to 12 inches long, the first maturing in about 70 days; seeds 6 by 9 mm., vinaceous cinnamon.

22903. From Paoting, Chihli, China, April, 1908. Low, half bushy; the row mass 12 inches high, 18 inches broad; trailing branches few, 2 feet long; leaflets medium sized, dark, considerably affected both by rust and leaf-spot; pods well filled, held high, straw colored, often purplish tinged, 5 to 6 inches long, the first maturing in about 85 days; seeds oblong rhomboid, about 5 by 7 mm., white with a maroon saddle that extends over the micropylar end and usually in a few scattered spots. This variety is nearly identical in habit with 18617, as well as in the color of the seeds.

22929. From Mount Selinda, Rhodesia, South Africa, May, 1908. Plants vigorous, nearly prostrate, the row mass 6 to 12 inches high, 6 feet broad, rather sparse; trailing branches 3 to 9 feet long; leaflets large, pale, not affected by rust, but with some red leaf-spot; very late, not blooming at Arlington Farm in 1908 in 130 days, nor in 1909 in 129 days. As grown in the greenhouse, the pods were purple, 6 or 7 inches long; seeds buff, more or less tinged with violet, subreniform, about 6 by 8 mm. Grown two seasons. This and the following four numbers from the same source are very similar in growth, the principal differences being in the seeds. All are too sprawling to be desirable.

22930. From Mount Selinda, Rhodesia, South Africa, May, 1908. Differs from the preceding only in the seed and the purple coloration of the stems and leaves. In greenhouse-grown plants the pods are purple violet, 7 to 8 inches long; the seeds vary from buff to dark violet even on the same plant, but are mostly buff, more or less clouded with violet, rhomboid, about 6 by 7 to 8 mm. This variety is very similar to, if not identical with, 21006.

22931. From Mount Selinda, Rhodesia, South Africa, May, 1908. See 22929. In greenhouse-grown specimens the pods were straw colored, 6 to

7 inches long; the seeds are very similar to those of New Era, 21088, though hardly as thick.

22932. From Mount Selinda, Rhodesia, South Africa, May, 1908. See 22929, with which it is practically identical in growth and habit. Pods grown in the greenhouse are straw colored, 6 to 7 inches long; seeds black, mostly about 6 by 7 mm.; Nos. 26399 and 26400, from the same source, grown in 1910, are apparently identical.

22933. From Mount Selinda, Rhodesia, South Africa, May, 1908. See 22929, with which it agrees in habit; original seeds rhomboid, 8 by 9 mm., buff, thickly speckled with blue, almost identical with those of Speckled Crowder, 22051.

22935. Asparagus bean. From Tekhoe, via Foochow, Fukien, China, June. 1908. Plants procumbent, viny, not very vigorous, the row forming a mass 10 inches high, 16 inches broad; trailing branches few, 1 to 3 feet long; leaves much affected with rust, and also with leaf-spot; flowers pale violet purple; prolific; pods purple, moderately inflated, 12 to 20 inches long, the first mature in about 70 days; seeds 6 by 10 mm., vinaceous, with darker longitudinally impressed striæ; iris dark.

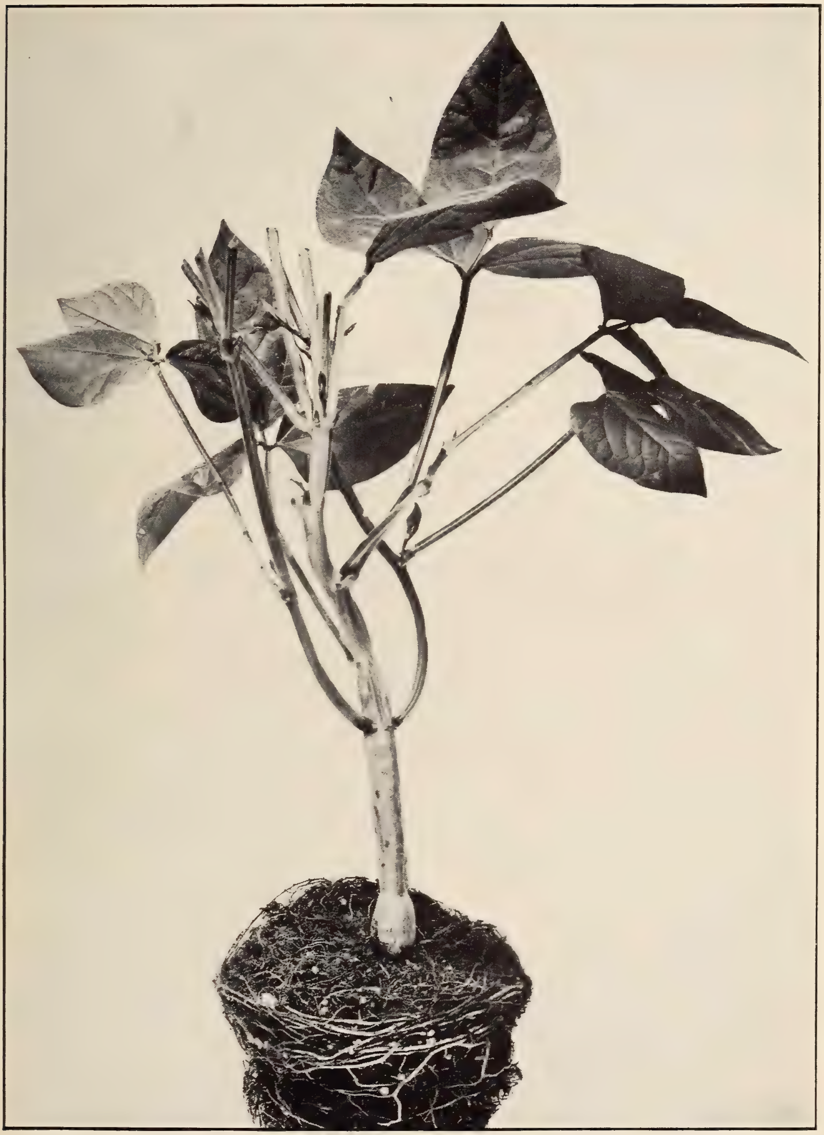
22935A. Asparagus bean. Mixed in 22935; differs only in having pale pods and reddish-purple smooth seeds.

22938. From Para, Brail, June, 1908, as "Feijao manteiga." Original seeds subreniform, variable, 3 to 4 by 5 to 7 mm., white. None would germinate.

22958. From Mount Selinda, Rhodesia, South Africa, June, 1908. Very similar in habit and general appearance to Nos. 22929, 22930, 22931. 22932, 22933, and 22959, all from the same source. The original seeds are rhomboid, about 6 by 6 mm., black more or less marbled with buff, or buff more or less marbled with black, the buff speckled with fine blue dots, as in Taylor. From the color of the seeds, this is evidently a cross between a black, such as 22932, and a speckled, like 22933. All of the plants grown in the greenhouse, however, produced seeds like the original with one exception, in which the seeds were buff, and practically identical with 22960. The variety is remarkable for the swollen base of the stem, which character is also transmitted to its hybrids. (See Pl. XI.)

22959. From Mount Selinda, Rhodesia, South Africa, June, 1908. In all respects except seed like the preceding and 22929, procumbent, very vigorous, the row mass about 2 feet high, 3 to 4 feet broad; branches many, 3 to 5 feet long; leaves large, rather dark; not blooming in 1908 in 130 days. In greenhouse-grown specimens the flowers were violet purple; the pods are reddish purple, 7 to 8 inches long; seeds maroon purple, rhomboid, 8 by 9 mm.

22960. From Mount Selinda, Rhodesia, South Africa, June, 1908. In vegetative characters not distinguishable from the preceding; in greenhouse-grown specimens the pods are purple or purple spotted, 6 to 7 inches long; seeds buff, rhomboid, 5 to 6 mm. long, rather angular, and practically indistinguishable from those of Iron. This is very similar to 22929, but lacks the violet color on the seeds. No. 26405 from the same source proved identical. It is also very similar to 24341, from Pretoria.



GREENHOUSE-GROWN PLANT OF COWPEA NO. 22958, SHOWING THE PECULIAR SWELLING ON THE BASE OF THE STEM CHARACTERISTIC OF THIS VARIETY.

(Natural size.)

23214. Asparagus bean. From Tangsi, Chekiang, China, July, 1908. Chinese name "Chang kiang tou." Vigorous, procumbent, very viny, the row mass 12 inches high, 2 to 2½ feet broad; branches few, 3 to 4 feet long; leaves dark, much affected by rust; flowers pale violet purple; prolific; pods much inflated, 10 to 14 inches long, pale, the first maturing in about 100 days; seeds 6 by 10 mm., reddish to purplish buff, longitudinal striæ. The longitudinal darker lines that occur on the seeds of this and other varieties are peculiar. They vary in number, sometimes appearing on only one side of the seed. In general they are all parallel to the margins of the seed. They present somewhat the appearance of being due to pressure from the pod, but as they are conspicuous on the immature seeds in soft green pods, this idea is scarcely tenable.

23307. From Peking, Chihli, China, February, 1908. Procumbent, moderately vigorous, the row mass 10 to 12 inches high, 3 feet broad, dense; branches rather few, 2 to 3 feet long; leaflets dark, medium sized, somewhat affected both by rust and leaf-spot; flowers pale violet purple; fairly prolific; pods well filled, held low, straw colored, the first maturing in 132 days; at Monetta, S. C., the first pods matured in 70 days, all in 90 days; seeds 6 by 7 to 8 mm., oblong, buff marbled with brown, usually a small area at the chalazal end white; iris brown. Indistinguishable from this is 22539, from Chefoo, Shantung, China. It is also very similar to 17849.

23307A. Low, half bushy, moderately weak; the row mass 6 to 12 inches high, 3 feet broad; traliing branches few, 2 to 3 feet long; leaflets, medium in size and color, somewhat affected by rust, free from leaf-spot; flowers violet purple; not prolific; pods rather poorly filled, held low, straw colored or somewhat purplish, 5 to 8 inches long, the first maturing in about 85 days; seeds oblong rhomboid, about 6 by 8 mm., vinaceous cinnamon to vinaceous excepting the chalazal end which is white.

23307B. Low, half bushy, moderately vigorous, the row mass 12 inches high, 16 inches broad; trailing branches rather few, 18 inches long; leaflets medium sized, dark, considerably affected by rust and much by leaf-spot; flowers almost white; not prolific; pods medium well filled, held rather low, straw colored or some faintly tinged with purple, 5 to 7 inches long, the first maturing in about 90 days; seeds oblong, about 5 by 7 mm., white with a large saddle of maroon which extends over the micropylar end and usually with a few scattered spots. A small, nearly worthless variety similar to 22903 but not identical with it.

23307C. In habit and date of maturity not distinguishable from 23307. Pods straw colored, 5 to 6 inches long; seeds subreniform, 5 by 7 mm., all but the chalazal end maroon marbled with black; chalazal end white, this usually covering one-fifth to one-fourth of the seed.

23307D. Somewhat procumbent, half bushy, not vigorous, the row mass 10 to 12 inches high, 2 feet broad; trailing branches 1 to 3 feet long; leaflets medium sized, dark, free from rust, very much affected by both red and white leaf-spot; flowers pale violet purple; moderately prolific; pods well filled, held low, pinkish to straw colored, 5 to 6 inches long, the first maturing in about 80 days; seeds subreniform, 5 by 7 to 8 mm., white with a large saddle of buff; iris olive. This variety has seeds similar to 17339, but is much inferior.

23328. Asparagus bean. From Canton, Kwangtung, China, July, 1908. Plants procumbent, vigorous, viny, the row forming a mass 8 inches high, about 2 feet broad; vines 4 to 6 feet long; leaflets large, pale, much affected with rust; not very prolific; pods pale, moderately inflated, 12 to 24 inches long, the first maturing in about 100 days; seeds red, with a small white area at the chalazal end, 6 by 10 mm.

23524. From Chungking, Szechwan, China, August, 1908. Suberect, half bushy, moderately vigorous, the row mass 16 inches high and as broad; leaflets medium sized, free from rust, much affected by white leaf-spot; flowers violet purple; moderately prolific; pods poorly filled, held medium high, straw colored, the first maturing in 70 days; seeds subreniform, smooth, 5 by 8 mm., buff; iris olive. A very poor variety.

23720. From the Province of Inhambane, Portuguese East Africa, September, 1908. Plants very procumbent, vigorous, very viny, the row mass about 18 inches high, 4 to 5 feet broad; trailing branches rather numerous, 3 to 8 feet long, very coarse; leaflets large, pale, not affected by rust or leaf-spot; did not bloom at Arlington in 1909 in 132 days. At Monetta, S. C., in 1909, its habit was identical with that at Arlington, but it produced blossoms and young pods in 115 days; original seeds half crowder about 7 by 10 mm., buff, thickly speckled with blue, the blue specks arranged in groups.

23721. From Portuguese East Africa, September, 1908. Plant procumbent, vigorous, very viny, the row mass 20 inches high 4 feet broad; trailing branches many, 4 feet long, coarse; leaflets large, dark, not affected by rust nor by leaf-spot; flowers violet purple; not prolific; no pods maturing at Arlington in 133 days; original seed buff, oblong or rhomboid, about 7 by 7 mm.

23760. From Chile, October 1908, under the name "Correguela." Indistinguishable in 1910 from 17335.

23959. Asparagus bean. From Peking, Chihli, China, October, 1908. Chinese name "Yueng pian doh." No cultural notes; original seeds reniform, 5 by 9 mm., pink to reddish.

24185. *Smallpox.* From Soochow, Kiangsu, China, November, 1908, under the name of "Smallpox bean." Procumbent, viny, vigorous, coarse, the row mass 12 to 16 inches high, 4 feet broad, dense; trailing branches many, 3 to 6 feet long; leaflets dark, medium sized, free from rust, but with some red leaf-spot; flowers pale violet purple; pods few, rather poorly filled, held low, straw colored, strongly falcate, 8 to 9 inches long, the first mature in 100 days; seeds subreniform about 7 by 10 mm., vinaceous buff marbled with brown; grown two seasons. Not a desirable variety. At Monetta, S. C., this variety was much affected by wilt and had not bloomed at the end of 90 days. It is very closely similar to 23307.

24186. From Soochow, Kiangsu, China, November, 1908. Procumbent, very viny, vigorous, the row mass 18 inches high, 2½ feet broad; trailing branches many, 4 feet long, rather coarse; leaflets large, dark, not affected by rust and but little by leaf-spot; flowers pale violet purple; no pods maturing in 133 days. At Monetta, S. C., this variety succumbed to wilt and produced neither flowers nor pods in 112 days. Original seed pinkish-buff, oblong or rhomboid, about 8 by 10 mm., very conspicuously keeled on the back. Grown only in 1909.

24186A. Procumbent, viny, moderately vigorous, the row mass 16 inches high, 3 feet broad, thick; trailing branches slender, 3 to 5 feet long, green; leaflets medium sized, free from rust, much affected with red leaf-spot; moderately prolific; pods well filled, somewhat inflated, 6 to 8 inches long, the first maturing in about 85 days; seeds thick, irregular in form, strongly keeled, about 9 mm. long, pink with the chalazal end white; iris brown. A distinct but poor variety. It is probably a cross between a cowpea and an asparagus bean.

24186B. From a single plant found in 24186 at Arlington Farm, 1909. Suberect, half bushy, moderately vigorous, the row mass 15 inches high, 18 inches broad; leaflets dark, free from rust, considerably affected by white leaf-spot; flowers pale violet purple; prolific; pods well filled, held medium high, straw colored, 7 to 9 inches long, the first maturing in about 75 days; seeds rhomboid, a little longer than broad, 6 to 7 mm. long, sharply keeled, not thick, buff, the iris brown. An early variety very different from any other with buff seeds.

24187. From Soochow, Kiangsu, China, November, 1908. Vigorous, very viny, the row mass 20 inches high, 3 feet broad; trailing branches many, 4 to 7 feet long, coarse, green; leaflets large, dark, held low, not affected by rust but considerably by white leaf-spot; flowers violet purple; pods few, fairly well filled, held rather low, straw colored or slightly purplish, 7 to 9 inches long, the first maturing in 100 days; seeds buff pink, subreniform, about 6 by 8 mm. At Monetta, S. C., this variety ripened its first pods in 1909 in about 60 days and all the pods were ripe in 90 days. It has no particular merit. Grown only one season. It is closely similar to 18519.

24188. From Soochow, Kiangsu, China, November, 1908. Procumbent, viny, vigorous, the row mass 8 to 12 inches high, 3 to 4 feet broad; trailing branches medium coarse, green, 3 to 5 feet long; leaflets large, medium in color, free from rust, somewhat affected by leaf-spot, held late; flowers almost white; pods few, held medium low, straw colored, 6 to 7 inches long, the first barely matured when killed by frost in 133 days; seeds subreniform, 6 by 8 mm., white with a large black eye and occasionally one or two isolated black spots. At Monetta, S. C., the plants were a little larger but similar, though forming no blossoms or pods at all. A very late, distinct variety, but too low and sprawling.

24189. From Soochow, Kiangsu, China, November, 1908. See 16796.

24190. From Soochow, Kiangsu, China, November, 1908. Vigorous, very viny, the row mass 24 to 30 inches high, 2½ feet broad; trailing branches many, about 3 feet long; leaflets medium in size and color, free from rust and but little subject to leaf-spot; flowers almost white; pods few, the first nearly matured when killed by frost in 133 days, straw colored, 6 to 8 inches long; seeds oblong, about 4 by 7 mm., white with a small black eye. At Monetta, S. C., this variety behaved nearly the same as at Arlington; all the plants were dead from wilt October 1, 1909, and no pods ripe.

24191. From Soochow, Kiangsu, China, November, 1908. Half-bushy, vigorous, the row mass 24 to 30 inches high, about 3 feet broad; trailing branches many, 3 to 4 feet long; leaflets medium in size and color, considerably affected by rust, and somewhat by both red and white leaf-spot; flowers nearly white; prolific; pods medium well filled, held medium high, straw colored, 5 to 7 inches long, the first maturing in about 120 days; seeds subreniform, small, white with small black eye, about 4 by 7 mm. A late prolific Blackeye of good habit, but subject to rust; grown two seasons.

24192. From Soochow, Kiangsu, China, November, 1908. Low, half-bushy, vigorous, the row mass 24 inches high, 30 inches broad; trailing branches medium in number, 3 to 5 feet long; leaflets medium in size and color, free from rust and leaf-spot; flowers almost white; pods few, held rather low, straw colored, 4 to 6 inches long, the first maturing in about 125 days; seeds white with buff eye, subreniform, about 4 by 6 mm. At Monetta, S. C., in 1909, this grew somewhat larger, but produced neither flowers nor pods in 120 days.

24213. Asparagus bean. From Chile, December, 1908, under the name Monkey's Tail. Seeds reddish, reniform, 5 to 6 by 10 to 11 mm. No cultural notes.

24341. From Pretoria, Transvaal, December, 1908. Vigorous, viny, the row mass 20 inches high, 2½ feet broad; trailing branches medium in number, 3 feet long, coarse; flowers pale violet purple; leaflets dark, medium sized, held late, not affected by rust, but considerably by white leaf-spot; fairly prolific; pods well filled, held medium low, straw colored or somewhat purplish tinged, 5 to 7 inches long, the first maturing in about 100 days; seeds pinkish buff, rhomboid, strongly keeled, about 6 by 7 mm. An undesirable variety.

24341A. Half bushy, moderately vigorous, the row mass 12 to 20 inches high, 3 feet broad, rather sparse; trailing branches few, 2 to 3 feet long; leaflets medium sized, dark, free from rust and leaf-spot; flowers violet purple; prolific; pods well filled, held medium high, straw colored, 5 to 6 inches long, the first maturing in about 85 days; seeds rhomboid, 6 by 7 mm., buff, thickly and minutely speckled with blue. The seeds of this are practically identical with New Era, and the plant in its habit suggests that variety. It is, however, much more viny and slender. Grown two seasons.

24341B. Catjang. Plant half bushy, viny, moderately vigorous, the row mass 20 to 30 inches high; branches few, 2 to 3 feet long, dark purple; leaflets medium sized, free from rust, but with some white leaf-spot; flowers violet purple; pods many, well filled, held medium high, drab in color, the first maturing in about 90 days, 4½ to 5 inches long; seeds maroon, rhomboid, 5 mm. long. A tall, slender, distinct variety with about the same habit as 24341.

24341C. Low, half bushy, the branches spreading, moderately vigorous, the row mass 12 to 20 inches high, about 3 feet broad; trailing branches few, 1 to 3 feet long, purple colored; leaflets medium sized, dark, purple tinged, free from rust and leaf-spot; flowers violet purple; moderately prolific; pods well filled, held low, straw colored or somewhat purplish tinged, 6 to 7 inches long, the first maturing in about 90 days; seeds rhomboid, about 6 by 7 mm., buff to violet, usually buff more or less clouded with violet, the iris olive brown.

This variety closely resembles 29277, but is larger and looser in habit, and too procumbent to be desirable.

24341D. Procumbent, viny, moderately vigorous, the row mass 12 inches high, 3 feet broad; trailing branches rather few, 3 to 4 feet long; flowers purple; leaflets dark, medium sized, held late, not affected by rust, but considerably by leaf-spot; pods well filled, held low, straw colored, 5 to 7 inches long, the first maturing in about 80 days; seeds fawn colored, rhomboid, about 6 by 7 mm. Only one plant of this variety grew, and it could not be identified with any other. While the seeds closely resemble that of Iron, the plant is very different. Excepting for the seed, it scarcely differs from 24341.

24414. *Brabham.* Progeny of 21599.

24566. From Central Asia, December, 1908. Low, half bushy, moderately vigorous, the row mass 16 inches high, 2 feet broad; trailing branches few, 2 to 3 feet long; leaflets dark, medium sized, much affected by rust and somewhat by leaf-spot; flowers almost white; not prolific; pods moderately well filled, held rather high, straw colored or somewhat purplish tinged, 5 to 6 inches long, the first maturing in about 100 days; seeds yellowish white with small buff eye, oblong-rhomboid, about 5 by 7 mm. Very similar to 17329, but not so good.

24566A. Low, half bushy, very viny, not vigorous, the row mass 16 inches high, 2 feet broad; trailing branches few, 3 to 5 feet long; leaflets medium in size and color, shed early, affected by both rust and leaf-spot; flowers nearly white; not prolific; pods not well filled, held rather low, straw colored, often purplish tinged, 8 to 9 inches long, the first maturing in 100 days; seeds subreniform, about 6 by 8 mm., some of them wrinkled, white with medium black eye. A very poor but distinct variety. Grown two seasons.

24566B. Moderately vigorous, half bushy, the row mass 16 inches high, 18 inches broad; trailing branches many, 2 to 4 feet long; leaflets medium in size and color, much affected by rust but little by leaf-spot; flowers pale violet purple; pods many, poorly filled, held rather high, straw colored, purplish tinged, 5 to 6 inches long, the first maturing in 100 days; seeds buff, rhomboid, 5 by 7 mm. A poor variety with the habit of 17335.

24566C. Rather procumbent, vining but little, not vigorous, the row mass 12 inches high, 18 inches broad; branches few, 2 to 3 feet long; leaflets small, much affected by rust and considerably by red leaf-spot; flowers almost white; pods many, well filled, held low, purple when immature, more or less purplish when ripe, the first maturing in about 90 days; seeds subreniform, about 5 by 7 mm., black-and-white blotched, the black mainly about the hilum and the micropylar end, but usually with isolated spots also. A distinct but not desirable variety; too subject to rust.

24597. *Iron.* From Bolgiano & Co., Washington, D. C., January, 1909. See 8418.

24918. *Whippoorwill.* From T. W. Wood & Sons, Richmond, Va., March, 1909. See 17349.

24919. From T. W. Wood & Sons, Richmond, Va., March, 1909, as "Red Ripper." Very similar in all respects to 17350, but somewhat larger and nearly a month later, the first pods maturing in about 120 days. The seeds and pods are practically indistinguishable.

24920. From T. W. Wood & Sons, Richmond, Va., March, 1909, as "Wonderful." No cultural notes.

25016. From Khartum, Sudan, March, 1909, under the vernacular name "Masri." This is very similar to Early Blackeye 17335, but somewhat inferior. In 1910 the pods were badly diseased and distorted, apparently by the same disease which affects so many other varieties of cowpeas.

25016A. Low, half bushy, moderately vigorous, the row mass 16 inches high, 20 inches broad; trailing branches rather few, 3 to 5 feet long, coarse; leaflets small, dark, much affected by rust and considerably by the red leaf-spot; flowers almost white; not prolific; pods poorly filled, held medium low, straw colored, 5 to 6 inches long, the first maturing in about 90 days; seeds transversely wrinkled, white with a large buff eye, about 6 by 8 mm.

25016B. In habit very similar to 25016A, but a little smaller and a few days earlier. Seeds white, smooth, or transversely wrinkled, with grayish eye, about 5 by 7 mm.

25078. *Groit.* From Coulterville, Ill., March, 1909. See 17334.

25088. *Early Red.* From Mr. J. D. McLouth, Muskegon, Mich., March, 1909. Half bushy, moderately vigorous, viny, the row mass 16 to 18 inches high, 2 to 3 feet broad; trailing branches 3 to 4 feet long; leaflets free from rust, considerably affected by red leaf-spot; flowers violet purple; prolific; pods slightly tinged with purple, 7 to 8 inches long, held medium low, the first maturing in 80 to 90 days; seeds maroon, subreniform or somewhat rhomboid, 6 by 8 mm. The same variety has been obtained from J. H. McLean & Sons, Eatontown, N. J., and grown under 0895. Mr. McLouth writes as follows about this variety: "My seed of this has been grown from a solitary plant found in a field of Whippoorwill in 1905. It is by far the best I have grown in its earliness and abundant pod production." A fairly good, medium-early variety.

25144. Catjang. From Soochow, Kiangsu, China, March, 1909. Plants half bushy, rather vigorous, quite viny, the row mass 12 to 14 inches high; trailing branches many, 2 to 3 feet long; leaflets medium in size and color, much subject to rust and a little to red leaf-spot; flowers violet purple; pods many, well filled, held high, drab in color, 4 to 5 inches long, the first maturing in about 88 days; seeds rhomboid, vinaceous, 5 to 6 mm. Not of much value; too much subject to rust.

25145. From Soochow, Kiangsu, China, March, 1909. Very procumbent to nearly prostrate, viny, vigorous, the row mass 12 to 15 inches high, 3 feet broad; trailing branches many, 3 to 6 feet long, green; leaflets very large, much affected with rust; flowers violet purple; not prolific; pods strongly keeled, well filled, held low, straw colored, 6 to 7 inches long, the first maturing in 110 days; seeds brick red, darkening to maroon purple, rhomboid, about 6 by 8 mm. A very distinct but not valuable variety.

25146. From Soochow, Kiangsu, China, March, 1909. Low, half bushy, viny, medium vigorous, the row mass 12 to 15 inches high, 4 feet broad; trailing branches many, 3 to 5 feet long; leaflets large, dark, quite subject to rust and to leaf-spot, shed rather early; flowers pale violet purple; pods few, held medium high, drab, 8 to 9 inches long, the first maturing in 90 days; seeds subreniform, 6 by 8 mm., vinaceous, with a dark iris. This variety has the habit of Red Ripper, but is too much subject to rust to be of value. Grown only one season.

25147. From Soochow, Kiangsu, China, March, 1909. Low, half bushy, vigorous, the row mass 22 inches high, 3 feet broad; trailing branches many, 6 feet long, coarse; leaflets large, dark, little affected by rust and by red leaf-spot; flowers almost white; pods rather few, on peduncles 18 inches long, the first maturing in 125 days; seeds white, smooth or transversely wrinkled, with medium-sized buff or buff-brown eye, subreniform, about 6 by 8 mm. A distinct, but not very valuable variety.

25148. Asparagus bean. From Soochow, Kiangsu, China, March, 1909. Procumbent, very viny, moderately vigorous, the row mass 18 inches high, 3 feet broad; trailing branches slender; leaflets free from rust but much affected by red and white leaf-spot and therefore shed early; flowers pale violet purple; prolific; pods well filled, moderately inflated, straw colored, 10 to 16 inches long, the first maturing in about 75 days; seeds reniform, 5 by 10 mm., vinaceous-rufous, longitudinally striate; iris nearly black. Nearly identical with 23214. (See Pl. V.)

25149. Asparagus bean. From Soochow, Kiangsu, China, March, 1909. Very similar to the preceding, but not so vigorous; leaflets large, dark, affected both by rust and leaf-spot; flowers pale violet purple; moderately prolific; pods pale, much inflated, 12 to 18 inches long, the first maturing in about 90 days; seeds 5 by 11 mm., more or less grooved, white with a reddish-purple saddle often extending over the micropylar end, and sometimes spots of the same color on the back and sides; iris dark. Indistinguishable from this both in seeds and habit is 26662, from Medan, Sumatra. (See Pl. V.)

25310. *Iron* × *Black.* (Orton No. 14a4–1–3–1.)
25311. *Iron* × *Black.* (Orton No. 14a4–1–3–4.)
25312. *Iron* × *Black.* (Orton No. 14a8–5–3–1.)

Three hybrids from Monetta, S. C., selected by Mr. W. A. Orton in the spring of 1909 for productiveness and resistance to wilt and nematodes. See 27859.

25313. *Iron* × *Whippoorwill.* From same source as above (Orton No. 18b5–1). See 27867.

25314. *Peerless*, or *Running Speckled.* From the N. L. Willet Seed Co., Augusta, Ga., April, 1909. Tall, half bushy and very viny, vigorous, the row mass 30 to 36 inches high, 4 feet broad, dense; trailing branches many, 3 to 6 feet long, not coarse; leaflets medium in size and color, held late, immune to rust and with little or no leaf-spot; flowers pale violet purple; prolific; pods held high, well filled, usually purple tinged, 6 to 8 inches long, the first maturing in 105 days; seeds oblong, 7 by 9 mm., buff marbled with brown; grown three seasons. Very similar in habit and general appearance to Brabham, but a little later. On account of its large size and suberect growth it should prove one of the best varieties for hay and should be largely tested in the South. At present it is grown mainly in Washington County, Ga., where it perhaps originated. Nos. 0819 and 26495 are other lots from the same source as 25314, and No. 01127, from Mr. J. J. Smith, Utica, Miss., is indistinguishable.

25345. *Iron × Whippoorwill.* From Monetta, S. C. (Mr. W. A. Orton's hybrid No. 18a–1–1.) See 27867.

25369. From Prof. S. M. Tracy, Biloxi, Miss., November, 1908. Rather tall, half bushy, viny, vigorous, the row mass 24 to 36 inches high, 3 feet broad, rather sparse; trailing branches few, 3 to 5 feet long; leaflets large, dark green, held late, free from rust and leaf-spot; flowers violet purple; pods few, straw colored, somewhat purple tinged, 6 to 8 inches long, the first maturing in 130 days; seeds subreniform, 5 by 8 mm., buff marbled with brown, the iris olive yellow. Grown one season, 1909. A late variety inferior in habit to Whippoorwill, but with identical seeds.

25512. *Wild Louisiana.* From the J. Steckler Seed Co., New Orleans, La., April, 1909. "Wild Louisiana" is a trade name given to cowpeas which are naturalized in Louisiana and which volunteer from year to year. In Lafourche Parish they are especially abundant. The commercial seed consists of a mixture of different-colored seed, namely, buff, black, maroon, pink, brown, and marbled, but is principally buff. When segregated these all breed true. The wild seed is decidedly smaller than most cultivated sorts, but in a number of cases the progeny as grown at Arlington Farm produces seed larger than the original. Another series of these segregates is described under 17405. The buff seed form of 25512 grown two years is indistinguishable from 22054.

25512A. Seeds black, and the plants are very similar in all respects to Black No. 29292.

25512B. Plants half bushy, vigorous, the row mass 24 inches high and as broad; trailing branches moderately numerous, about 3 feet long; leaflets large, medium dark, immune to rust, but somewhat subject to red leaf-spot; flowers white; moderately prolific. At Arlington Farm, 1909, none of the pods fully matured in 132 days, at which time they were killed by frost; in 1910 about 5 per cent of the pods were mature in 102 days. The 1910 pods are 8 to 9 inches long and the seeds oblong, pale brown, 7 to 10 mm. long, somewhat larger and paler than the original seed. This variety is very similar to Brown Coffee 17404, except that it is later and larger. The following lots were identical: 0992, from Mr. J. H. Breedlove, Florence, Ark., 1910; 0993, from Mr. Samuel Wreyford, Waldo, Ark., 1910; 0994, from Mr. O. Z. Redson, Clanton, Ala., 1910; 0995, from Mrs. H. W. Shomas, De Funiak Springs, Fla., 1910; 01385, from North Carolina Agricultural Experiment Station, 1909—the variety referred to as "Brown Coffee" in Bulletin of the North Carolina Department of Agriculture (vol. 31, no. 6).

25512C. Half bushy, very viny, vigorous, the row mass 24 inches high, 4 feet broad; trailing branches many, 3 to 5 feet long; leaflets held late, free from rust and leaf-spot; flowers pale violet purple; not prolific; pods straw colored, 6 to 8 inches long, the first maturing in about 105 days; seeds purplish maroon, subreniform, about 5 by 7 mm. Very similar to 25088, but larger in growth and pods very different.

25512D. Very procumbent, moderately vigorous, the row mass 6 to 12 inches high, 3 feet broad, very sparse; trailing branches few, 3 to 4 feet long; leaflets pale, medium sized, free from rust, considerably affected by leaf-spot; flowers violet purple; pods few, the first about fully grown in 133 days when killed by frost; original seeds indistinguishable from Whippoorwill 17349. A very late and inferior variety.

25714. Catjang. From Poona, Bombay, India, June, 1909. Procumbent, viny, vigorous, the row mass 18 inches high, 3 feet broad; trailing branches rather coarse, green, 3 to 8 feet long; leaflets medium sized, held late, free from rust, somewhat affected by red leaf-spot; pods few, some maturing in 1910 at the end of 120 days, straw colored, 4½ to 5 inches long; seeds buff, oblong, plump, 4 to 5 by 6 to 7 mm.; iris nearly black. This variety has practically the same habit as 21603.

25785. From Amani, German East Africa, July, 1909. Procumbent, very viny, vigorous, the row mass 8 to 10 inches high, 4 feet broad; trailing branches many, 3 to 5 feet long; leaflets free from rust and leaf-spot; very late, not even blooming in 1910 at the end of 100 days; original seeds buff, speckled, rhomboid, 6 by 6 mm.; iris nearly black.

25786. From Amani, German East Africa, July, 1909. Procumbent, very viny, moderately vigorous; trailing branches 3 to 7 feet long, green; the row mass sparse, 2½ feet broad; leaflets pale, free from rust, moderately affected by white leaf-spot; flowers violet purple; moderately prolific; pods well filled, held low, slender, 5½ to 6 inches long, straw colored, marked with irregular longitudinal splotches of purple, the first maturing in about 85 days; seeds rhomboid, 4 mm. broad and as long, buff speckled with blue and with irregular black splotches. A remarkable variety on account of the peculiar coloration of the pods and seeds.

25786A. Much like the preceding in habit and life period; pods dark purple, 3½ inches long; seeds rhomboid, 4 mm. long and broad, buff faintly marbled with brown; iris olive yellow. This is perhaps a catjang.

25787. From Amani, German East Africa, July, 1909. Procumbent, very viny, vigorous, the row mass 12 to 18 inches high, 4 to 5 feet broad; trailing branches 3 to 6 feet long; leaves medium sized, held late, free from rust and leaf-spot; flowers violet purple; pods few, well filled, held low, pale, 6 to 7 inches long, the first maturing in 80 days; seeds rhomboid, 6 to 7 mm. long and as broad, buff thickly speckled with blue; iris nearly black, apparently composed of fused specklings. Seeds of this are speckled, much as in New Era, but the variety is very different from any other having similar seeds. It is exceedingly viny, but bears only a few pods.

25857. From Venice, Italy, August, 1909. See 22050.

25857A. Suberect, half bushy, moderately vigorous, the row mass 20 inches high, 2 feet broad; trailing branches green, few, 2 to 3 feet long; leaflets medium sized, shed early, free from rust, much affected by red leaf-spot, pods numerous, moderately well filled, held medium high, straw colored, 5 to 7½ inches long, the first maturing in about 70 days; seeds subreniform, 5 by 7 mm., white with a buff eye; iris brown. A very early prolific sort; the best early sort with brown-eyed seeds.

25910. From Entebbe, Uganda, British East Africa, August, 1909. See 26302.

25918. From Hangchow, China, August, 1909. This in 1910 proved to be identical with 21511.

25965. From Pretoria, Transvaal, September, 1909. Procumbent, very viny, vigorous, the row mass 10 to 14 inches high, 5 feet broad, rather thin; trailing branches medium coarse, green, 3 to 8 feet long; leaflets dark green, held late, free from rust, a little affected by white leaf-spot; flowers violet purple; pods well filled, held low, straw colored, 7 to 8 inches long, the first maturing in about 90 days; seeds rhomboid, very angular, 6 by 7 mm., pale buff; iris olive. An undesirable variety.

25965A. Procumbent, very viny, vigorous, the row mass 14 inches high, 4 feet broad; trailing branches green, 3 to 5 feet long; leaves large, free from rust, but a little affected by red leaf-spot; produced a few blossoms but no pods at the end of 130 days. The original seeds are rhomboid, variable in size, 5 to 8 mm. in diameter, buff thickly speckled with blue. In habit this variety is much like 25787, but is much later.

25965B. Procumbent, vigorous, very viny, the row mass 10 to 15 inches high, 4 feet broad; trailing branches green, coarse, 3 to 6 feet long; leaflets large, medium green, held late, free from rust, considerably affected by white leaf-spot; pods few, well filled, held low, straw colored, the first maturing in about 90 days; seeds rhomboid, thick, 6 to 7 mm. in diameter, buff; iris brown. This is the largest buff-seeded crowder that we have grown, and is much later than 22053. It has but little value.

25965C. Procumbent, very viny, vigorous, the row mass 14 inches high, 3½ to 4 feet broad; trailing branches coarse, green, 5 to 6 feet long; leaflets large, medium dark, free from rust and leaf-spot; very late, neither blossoms nor pods appearing at Arlington Farm in 1910 at the end of 130 days. The original seeds are rhomboid, sharply keeled, very large, 9 by 11 mm, marbled like Whippoorwill.

25965D. In habit quite indistinguishable from 22929. Original seeds rhomboid, buff, more or less suffused with violet, subreniform, 6 by 8 mm.

26302. From Entebbe, Uganda, British East Africa, December, 1909, under the name "Mpendi kantinti." Procumbent, viny, moderately vigorous, the row mass 14 inches high, 5 feet broad, sparse; trailing branches medium coarse, green, 3 to 5 feet long; leaflets dark green, held late, free from rust, a little affected by white leaf-spot; flowers violet purple; pods few, well filled, held low, pinkish to straw colored, 5 to 7 inches long, the first maturing in about 70 days; seeds very rhomboid, 6 by 6 mm., brownish buff, the iris brownish. A very poor variety. Practically identical with it in habit are Nos. 25910, from the same source, and 26660, from Medan, Sumatra.

26303. From Entebbe, Uganda, British East Africa, December, 1909, under the name "Mpendi luzzige." Procumbent, viny, moderately vigorous, the row mass 12 inches high, 3 feet broad; trailing branches green, 2 to 3 feet long; leaves medium sized, free from rust, a little affected by red leaf-spot; flowers violet purple; pods rather few, well filled, held low, straw colored, 5 to 7 inches long, the first maturing in 80 days; seeds black, rhomboid, 6 by 7 mm. A poor variety of low but compact habit.

26362. Catjang. From Malkapur, Berar, India, November, 1909, as Chavali. Somewhat procumbent, half bushy, viny, moderately vigorous, the row mass 3 feet broad, 26 inches high; trailing branches 3 to 4 feet long; leaflets medium sized, held late, free from rust, considerably affected by red leaf-spot; very late, not even blooming in 1910 at the end of 105 days; original seeds subreniform, 4 by 5 mm., white with a buff eye. A worthless variety.

26399. From Mount Selinda, Rhodesia, November, 1909. Procumbent, vigorous, viny, the row mass 16 to 20 inches high, 3½ feet broad; trailing branches 3 to 5 feet long, green; leaflets large, free from rust and leaf-cpot; original seeds black, rhomboid, 5 by 5 to 6 mm. This variety produced no blossoms at Arlington Farm in 1910 at the end of 130 days. It is apparently identical with 22932 from the same source.

26400. From Mount Selinda, Rhodesia, November, 1909. Habitually this was not distinguishable in 1909 and 1910 from 26399. The original seeds, however, are larger, rhomboid, 7 by 8 mm., black.

26401. From Mount Selinda, Rhodesia, November, 1909. This proved to be the same as 22931.

26402. From Mount Selinda, Rhodesia, November, 1909. Not different from 26401.

26403. From Mount Selinda, Rhodesia, November, 1909. In habit and lateness this was like all the other lots from Mount Selinda. The seeds are maroon like 22959, but smaller, rhomboid, 5 by 5 mm.

26404. From Mount Selinda, Rhodesia, November, 1909. In all respects this proved indistinguishable from 22929 from the same source.

26405. From Mount Selinda, Rhodesia, November, 1909. This proved identical with 22960.

26406. From Mount Selinda, Rhodesia, November, 1909. Indistinguishable both in seeds and habit from 22930. It is also very much like 25965D; and may be identical.

26407. *Brabham.* From Monetta, S. C., December, 1908. Progeny of 21599.

26495. *Peerless.* From N. L. Willet Seed Co., Augusta, Ga., January, 1910. See 25314.

26497. *Groit.* From Coulterville, Ill., January, 1910. See 17334.

26580. Catjang. From Mr. H. W. Potts, Hawkesbury Agricultural College, Richmond, New South Wales, January, 1910, under the name "Poona." Not included in the 1910 trials. Seeds buff, oblong, 4 by 5 mm.

26592. From Mr. J. L. Forelines, Millard, Ark., January, 1910. See 17363.

26660. From Medan, Sumatra, February, 1910. See 26302, which it closely resembles in all respects but the seed, which are buff, subreniform, 5 by 7 mm.; iris olive.

26661. Asparagus bean. From Medan, Sumatra, February, 1910. Procumbent, viny, moderately vigorous, the row mass 2½ feet broad; thin; trailing branches slender, about 3 feet long; leaflets free from rust, much affected by both red and white leaf-spot, shed early;

flowers violet purple; moderately prolific; pods fairly well filled, held low, straw colored, little inflated, 10 to 12 inches long, the first maturing in about 75 days; seeds pink, reniform, 5 by 9 mm. An early variety of little merit.

26662. From Medan, Sumatra, February, 1910. See 25149.

26844. *Townsend.* From Mr. E. C. Townsend, Vinemont, Ala., January, 1910. Suberect, half bushy, very vigorous, the row mass 2½ feet high, 2 feet broad; trailing branches green, coarse, few, 1 to 3 feet long; leaflets large, medium, green, held late, free from rust, but a little affected by white leaf-spot; flowers pale violet purple; moderately prolific; pods well filled, held rather high, straw colored, 6 to 9 inches long, the first maturing in about 75 days; seeds subreniform, white with a buff eye, the iris brownish yellow; grown only in 1910. This variety has an excellent upright habit, much like that of Whippoorwill, the habit being better than any other white or nearly white pea that we have grown. It is, however, not very prolific.

26849. From T. W. Wood & Sons, Richmond, Va., February, 1910, as "Unknown." No cultural notes.

26984. *New Era.* From T. W. Wood & Sons, Richmond, Va., May, 1910. Same as 21088.

27199. *Panmure Early Wonder.* From W. H. Maule, Philadelphia, Pa., March, 1910. Suberect, half bushy, moderately vigorous, the row mass 16 to 18 inches high, 2 feet broad; trailing branches green; leaflets medium sized, dark green, shed rather early, free from rust, much affected by white leaf-spot; peduncles purple; flowers violet purple; moderately prolific; pods well filled, held medium high, straw colored, 7 to 8½ inches long, the first maturing in about 70 days, and all maturing in 100 days; seeds buff, subreniform, quite flat, 7 by 8 mm.; iris brown. A variety of only second-rate value.

27502. Catjang. From Coimbra, Portugal, April, 1910. Suberect, half bushy, moderately vigorous, the row mass 18 inches high, 2 feet broad; branches slender; leaves medium sized, free from rust, but considerably affected by red leaf-spot; flowers violet purple; prolific; pods well filled, held high, drab colored, 3 to 4 inches long, the first maturing in about 80 days; seeds oblong, black, 4 by 5 mm. A fairly good variety of catjang.

27503. From Coimbra, Portugal, April, 1910. Somewhat procumbent, half bushy, moderately vigorous, the row mass 18 inches high and as broad; trailing branches few; leaflets medium sized, free from rust, very much affected by both red and white leaf-spot; flowers violet purple; moderately prolific; pods moderately well filled, straw colored, 4½ to 6 inches long, the first maturing in about 70 days; seeds buff, subreniform, 5 by 7 mm. A poor variety of no promise.

27504. From Coimbra, Portugal, April, 1909. In habit this resembles other black-eyed cowpeas, but is very late and procumbent, only a few pods ripening at the end of 100 days in 1910; seeds subreniform, 5 by 7 mm., white with a medium-black eye.

27543. *Whippoorwill.* From T. W. Wood & Sons, Richmond, Va., April, 1910. See 17349.

27544. *Iron.* From T. W. Wood & Sons, Richmond, Va., April, 1910. See 8418.

27545. *Unknown.* From T. W. Wood & Sons, Richmond, Va., April, 1910. Vigorous, very viny, the row mass 2 to 2½ feet high, 3 to 3½ feet broad; trailing branches 4 to 6 feet long; leaflets rather large, undulate, immune to rust but somewhat subject to red leaf-spot; flowers violet purple; moderately prolific; pods well filled, held medium high, straw colored, 6 to 8 inches long, the first maturing in about 110 days; seeds buff, rhomboid, rather sharply keeled; iris olive. This variety corresponds with the common conception of Unknown in being much later than Clay and more vigorous. As grown under this number, it is virtually identical in habit with 25512 and 22054, but has different seeds. This number is much later and larger than 13468, which has been grown as Unknown at Arlington Farm for eight years. Out of 142 lots of buff-colored cowpeas with subreniform seeds from nearly as many American sources in 1909, 62 are scarcely distinguishable from 27545. It is apparently the commonest buff-seeded cowpea grown in the Southern States.

27546. From T. W. Wood & Sons, Richmond, Va., April, 1910, as "Red Ripper." No cultural notes.

27547. *New Era.* From T. W. Wood & Sons, Richmond, Va., April, 1910. See 21088.

27548. *Ram's-Horn Blackeye.* From T. W. Wood & Sons, Richmond, Va., April, 1910. Suberect, half bushy, a little viny, moderately vigorous, the row mass 24 inches high, 3 feet broad; trailing branches green, few; leaves medium sized, shed early, free from rust, much affected by red leaf-spot; flowers pale violet purple; prolific; pods well filled, held moderately high, straw colored, 6 to 8 inches long, the first maturing in about 80 days, and all maturing within 100 days; seeds plump, subreniform, 7 by 10 mm., transversely wrinkled, white with a black eye. Identical with this variety is 0629, from Mr. J. W. Trinkle, Madison, Ind., grown three seasons. It is taller and better than 22050 and a few days later. The seed of 27548 looks exactly like California Blackeye as grown in California, and is perhaps the same. (See Pl. V.)

27549. *Unknown Black.* From T. W. Wood & Sons, Richmond, Va., April, 1909. Very vigorous and viny, somewhat procumbent, the row mass 2 feet high, 3½ feet broad; trailing branches green, 3 to 5 feet long; leaves medium sized, held late, free from rust, a little affected by red leaf-spot; flowers violet purple; moderately prolific; pods well filled, held medium high, straw colored, 7 to 10 inches long, the first maturing in about 90 days; seeds oblong rhomboid, black, 6 by 9 mm. This is a vigorous, rather late, black-seeded variety, considerably larger and later than ordinary Black. In habit it is quite like most other blacks.

27586. *Wilcox.* From Honolulu, Hawaii, April, 1910, presented by Mr. F. G. Krauss, who writes:

> A cowpea which, so far as I have been able to determine, originated in our trials of 1907, either as a mutant or rogue. As it does not resemble any of the half dozen varieties we have been growing in recent years I do not think it is a hybrid. It is far ahead of anything we have grown in cowpeas. In the fully developed form before drying, the pods are a beautiful deep crimson.

As grown at Arlington Farm, 1910, this was a procumbent sprawling variety, the row mass 1 foot deep, 3 feet broad, with long trailing branches, not even blooming in 130 days. Pods from Hawaii are quite flat and broad, 7 to 8 inches long; seeds buff, rhomboid, 6 to 8 mm. long and broad, flattened and strongly keeled; iris brown. Too late and procumbent to be of much value.

27859. *Iron* × *Black.* (Orton No. 14a4–1–3–1.)
27860. *Iron* × *Black.* (Orton No. 14a4–1–3–4.)
27861. *Iron* × *Black.* (Orton No. 14a8–5–3–1.)

These three numbers are from Mr. W. A. Orton and represent selections from hybrids made by him and selected at Monetta, S. C., especially for resistance to wilt and productiveness of seed. Plants from seeds from the 1908 crop at Monetta were also numbered respectively 25312, 25310, and 25311. The first three numbers were grown in 1910, the last three in 1909 and 1910. Previous selections by Mr. Orton of this same series, namely, 17384 (Orton 14a2–4–1), 17385 (Orton 14a2–2–1), 17389 (Orton 14a5–1–1), and 17400 (Orton 14b5–1–1) have been grown five years. Several of these lots, especially 17384, 17385, 17400, and 25311, have produced both black seeds and buff seeds, showing that some of the parent seed was heterozygote. Most of the lots are intermediate in habit between Iron and Black, being less procumbent than Black but hardly as erect as Iron. The best of them in 1910 were 25310 and 25312. These were not as good as Iron × Whippoorwill or Iron × Blackeye hybrids.

27862. *Iron* × *Large Blackeye.* (Orton 17b2–2–1.)
27863. *Iron* × *Large Blackeye.* (Orton 17b2–2–2.)
27864. *Iron* × *Large Blackeye.* (Orton 17b2–2–3.)
27865. *Iron* × *Large Blackeye.* (Orton 17b2–2–4.)
27866. *Iron* × *Large Blackeye.* (Orton 17c2–2–2.)

These five numbers are also hybrids from Mr. W. A. Orton grown at Monetta, S. C. At Arlington Farm in 1910 they were conspicuous in comparison with the other Iron hybrids for their fruitfulness, 27864 being the most productive of all. They do not have as tall a habit as the Whippoorwill hybrids.

27867. *Iron* × *Whippoorwill.* (Orton 18b1–2–3.) (See Pl. V.)
27868. *Iron* × *Whippoorwill.* (Orton 18b1–2–4.)
27869. *Iron* × *Whippoorwill.* (Orton 18b5–1–1.)
27870. *Iron* × *Whippoorwill.* (Orton 18b5–1–2.)
27871. *Iron* × *Whippoorwill.* (Orton 18b9–1–1.)

These five hybrids grown and selected at Monetta, S. C., by Mr. W. A. Orton, were tested only in 1910. Two similar hybrids, 25313 (Orton 18b5–1) and 25345 (Orton 18a1–1), were grown two years. All have the excellent habit of Whippoorwill and a decidedly greater fruitfulness than Iron. Under Arlington Farm conditions they seem decidedly superior in habit to the Iron × Black and Iron × Large Blackeye hybrids. No. 27869 is probably the best of all, but more yield tests are necessary before deciding this positively.

27887. Asparagus bean. From Malkapur, Berar, India, April, 1910, under the name "Val." Procumbent, very viny, vigorous, the row mass 18 to 20 inches high, 3½ feet broad; trailing branches slender; leaflets large, free from rust, a little affected by white leaf-spot; flowers violet purple; moderately prolific; pods well filled, little inflated;

straw colored, the first maturing in about 100 days; seeds reniform, 5 by 10 mm., buff; iris olive. A distinct variety.

29271. Catjang. Found growing in 21569A at Arlington Farm, 1909. Procumbent, viny, vigorous, the row mass 12 to 14 inches high, 3½ feet broad; trailing branches slender, green, 2 to 3 feet long; leaflets small, dark, numerous, free from rust, a little affected by both red and white leaf-spot; prolific; pods well filled, held rather low, drab colored, 2½ to 4 inches long, the first maturing in about 90 days; seeds oblong 4 by 6 mm., buff; the iris olive. A very peculiar variety of catjang, and possibly representing a distinct species of Vigna.

29272. Catjang. Found mixed with guar, 19648, from Surat, India, June, 1906. Moderately vigorous, suberect, the row mass 24 to 36 inches high, but thin, with scattered, ascending branches; trailing branches few, 2 to 2½ feet long; leaflets medium sized, pale, apparently immune to rust and but little affected by leaf-spot; flowers almost white; pods few, moderately well filled, held high, straw colored, 4 inches long, the first maturing in about 90 days; seeds yellowish white with a small brownish eye, oblong, about 3 by 5 mm. Grown three seasons under temporary No. 0336; a valueless variety.

29273. Catjang. From a single plant at Arlington Farm, 1909. Half bushy, moderately vigorous, the row mass 16 inches high, 2 to 2½ feet broad; trailing branches rather numerous, 2 to 3 feet long; leaflets medium in size and color, much affected by rust, apparently immune to leaf-spot; pods many, well filled, held high, straw colored, 5 inches long, maturing in about 105 days; seeds oblong, about 4 by 6 mm., pale buff, thickly marbled with dark brown; the iris olive. A fairly good prolific catjang.

29274. Catjang. A single plant found at Arlington Farm, 1909, growing in 21603. Half bushy, scarcely vining, moderately vigorous, the row mass 18 inches high, 2 feet broad; branches purplish, fine, 2 to 3 feet long. Leaflets numerous, small, dark green, held late, without rust and but little affected by leaf-spot; pods few, well filled, medium high, drab in color, 5 inches long, the first maturing in about 90 days; seeds oblong, 4 by 5 mm., buff, marbled with brown. A catjang of moderately good habit, but too shy a seed bearer.

29275. Catjang. From a single plant at Arlington Farm, 1909, in adsuki bean 17321, China. Half bushy, moderately vigorous, the row mass 16 inches high, 2 feet broad; trailing branches few, 2 to 4 feet long; leaves rather small, dark, much affected by rust and little by leaf-spot; pods many, well filled, head medium high, straw colored, the first maturing in about 100 days, about 5 inches long; seeds oblong, pink buff, 4 by 6 mm.; the iris olive. A prolific catjang of good habit but not a large grower.

29276. From the Public Gardens, Jamaica, 1906. Half bushy, vigorous, the row mass 18 to 24 inches high, 3 feet broad; trailing branches many, 2 to 4 feet long; leaflets dark, immune to rust but considerably affected by leaf-spot; flowers pale violet purple; prolific; pods well filled, held medium high, straw colored or somewhat purple tinged, 6 to 7 inches long, the first maturing in about 90 days; seeds small, rhomboid, white with medium black eye, about 6 by 7 mm. Later and larger than 17329; grown four seasons under temporary No. 0145.

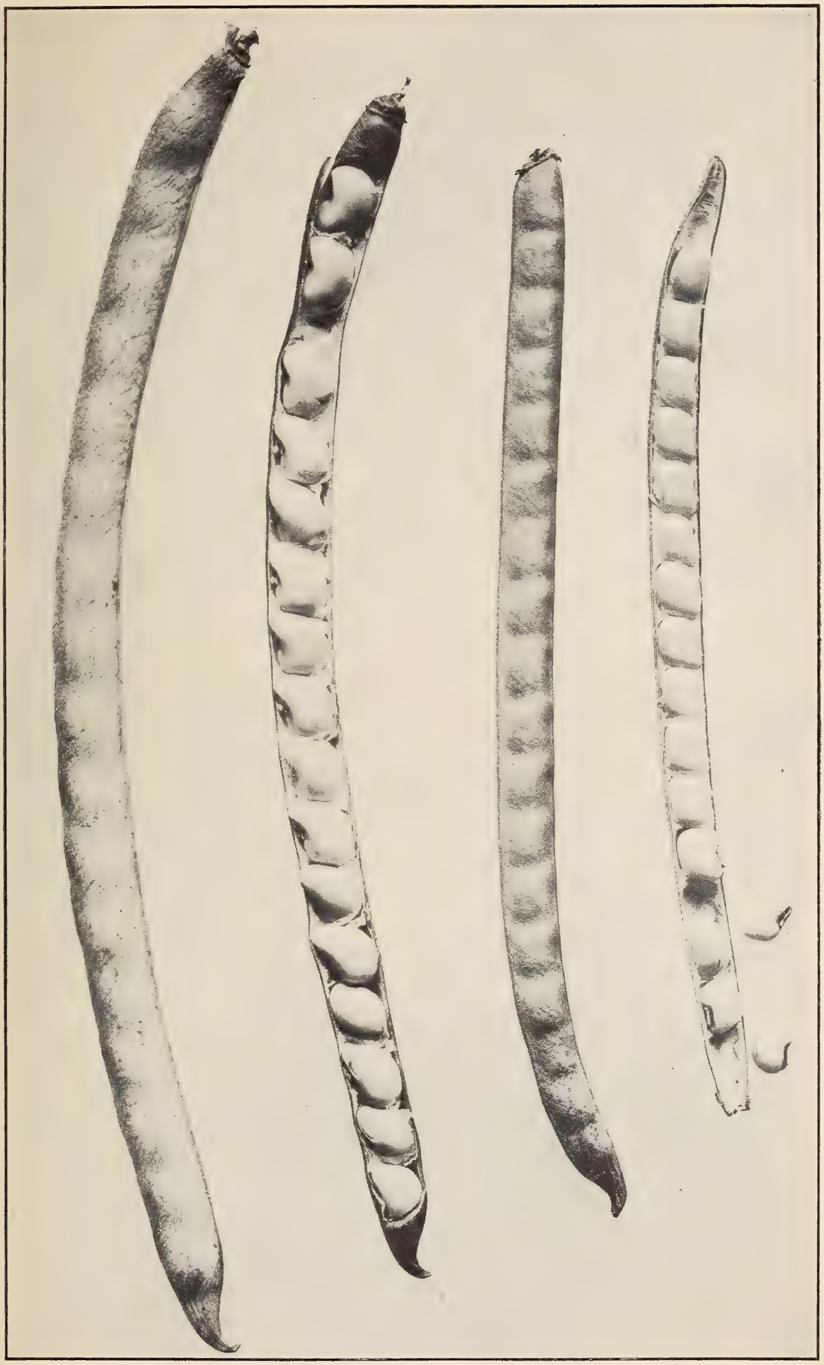
29277. From Nairobi, British East Africa, 1907. Medium tall, half bushy, the row mass 16 to 20 inches high, 2 to 2½ feet broad; trailing branches few, 1 to 3 feet long, usually purple; leaflets medium sized, dark, more or less tinged with purple, somewhat subject to rust but not much affected by leaf-spot; flowers pale violet purple; moderately prolific; pods well filled, held medium high, purplish, 4 to 5 inches long, the first maturing in about 100 days; seeds varying from buff to purple, usually buff more or less clouded with purple, rhomboid, about 5 mm. in diameter. The pods of this variety spread out horizontally. It has comparatively slight merit; grown four seasons under temporary No. 0509. (See Pl. XII.)

29278. From the Botanic Garden, Tokyo, Japan, May, 1907, as *Vigna sinensis* var. *bicontorta.* Low, half bushy, viny, not vigorous, the row mass 10 to 12 inches high, 18 inches broad; trailing branches few, 1 to 2 feet long; leaflets decidedly angular, medium in size and color, much affected by leaf-spot but immune to rust; flowers violet purple; prolific; pods well filled, held medium high, the first maturing in about 75 days; seeds vinaceous, oblong to rhomboid, about 6 by 8 mm. The pods are strongly flattened and much curved, varying from half a circle to three full turns, their length varying from 4 to 6 inches. A curious variety of little value; grown for four seasons under temporary No. 0511. (See Pl. VII.)

29279. From the Missouri Botanic Garden, St. Louis, August, 1907. Suberect, half bushy, somewhat viny, moderately vigorous, the row mass 18 inches high, nearly as broad; trailing branches purple, few, about 1 foot long; leaflets medium in size and color, shed early, subject to rust and to leaf-spot; flowers pale violet purple; pods fairly well filled, held medium high, straw colored, 5 to 6 inches long, the first maturing in 75 days; seeds oblong, vinaceous cinnamon, 5 by 8 mm. An early, moderately prolific variety of medium value; grown three seasons under temporary No. 0531.

29280. From Leghorn, Italy, November, 1907. Half bushy, weak, the row mass 14 inches high and as broad; trailing branches few, a foot or so long; leaflets small, shed early, slightly subject to rust, much affected by both red and white leaf-spot; flowers white; pods many, poorly filled, held medium low, straw colored, 5 to 7 inches long, the first maturing in about 65 days; seeds oblong, about 6 to 8 mm., black and white, variable, the black mostly about the hilum and the micropylar end of the seed. Grown four seasons under temporary No. 0536A; an early but very poor variety.

29281. From Leghorn, Italy, November, 1907. Low, half bushy, weak, the row mass 12 inches high, 16 inches broad; stems purplish; leaflets large, medium dark, much affected by rust, and considerably by red leaf-spot; flowers almost white; not prolific; pods fairly well filled, held rather low, straw colored, 5 to 7 inches long, the first maturing in about 80 days; seeds oblong, transversely wrinkled, white with a large saddle of buff which often extends over the micropylar end and with occasionally a few isolated spots of the same color on the back, about 5 by 8 mm. A very inferior variety; grown four seasons under temporary No. 0536B.



PODS OF TWO VARIETIES OF COWPEAS WITH HALF CROWDER SEEDS: NO. 17396 ON LEFT, NO. 29277 ON RIGHT.

(Natural size.)

29282. From Leghorn, Italy, one seed, November, 1907. Suberect, bushy, moderately vigorous, the row mass 18 inches high, 16 inches broad; trailing branches few, a foot or so long, reddish; leaflets medium in size and color, shed early, slightly affected by rust but much by leaf-spot; flowers violet purple; very prolific; pods well filled, held medium high, straw colored, 5 to 7 inches long, the first maturing in 65 to 70 days; seeds buff or pinkish buff, oblong about 6 by 8 mm. This is the earliest variety of cowpea yet grown at Arlington Farm, and is very prolific. While it has some weak points, it will probably prove to be a valuable variety, especially toward the North. Grown five seasons under temporary No. 0536J.

29283. From Leghorn, Italy, November, 1907. Moderately vigorous, viny, the row mass 14 inches high; trailing branches many, 4 to 6 feet long; leaflets dark, medium sized, shed early, considerably subject to rust and somewhat to leaf-spot; flowers pale violet purple; pods many, well filled, held high, straw colored, 5 to 7 inches long, the first maturing in about 85 days; seeds buff pink, rhomboid, rather strongly keeled, about 6 by 7 mm. A prolific variety of good habit, but too small and subject to rust; grown four seasons under temporary No. 0536K.

29284. From Mr. J. W. Trinkle, Madison, Ind., 1907. Grown three seasons under temporary No. 0554H. Suberect, half bushy, the row mass 18 inches high, 2½ feet broad; trailing branches few, 2 to 4 feet long; leaves medium in size and color, not subject to rust, somewhat affected by red leaf-spot; flowers white; moderately prolific; pods well filled, held medium high, 7 to 9 inches long, first maturing in about 90 days; seeds burnt umber in color, rhomboid, about 8 by 9 mm. This variety differs from Brown Coffee in having much broader pods and in being earlier and smaller. It is a derivative of the hybrid 0554, which apparently was a cross between Black and Taylor.

29285. *Small Black Crowder.* From Mr. J. W. Trinkle, Madison, Ind., November, 1907. Rather low, half bushy, moderately vigorous, the row mass rather sparse, 10 to 14 inches high, 3 feet broad; branches green, few, rather coarse; leaves medium sized, dark green, free from rust, considerably affected by both red and white leaf-spot; flowers violet purple; prolific; pods well filled, held medium high, 3½ to 5 inches long; seeds black; subglobose, 5 by 6 mm. A variety of no particular value. For its probable origin, see page 32. Grown under temporary No. 0562. (See Pl. X.)

29286. *Red Yellowhull.* From the Arkansas Agricultural Experiment Station, in 1903, through Prof. C. L. Newman. Bushy, suberect, vigorous, rather coarse, the row mass 24 inches high, 18 to 20 inches broad; trailing branches few, 2 to 5 feet long; leaflets large, dark, held late, free from rust, but subject to red leaf-spot; flowers violet purple; prolific; pods well filled, held fairly high, straw colored; 8 to 9 inches long, the first maturing in 100 days; seeds maroon, rhomboid, 6 by 8 mm. The seeds of this are much like 17350. The plants, however, are coarser, much more nearly erect, and more prolific. It is perhaps the best of the maroon-seeded varieties. Grown five seasons under temporary No. 0590.

29287. *Self-Seeding Clay.* From the Arkansas Agricultural Experiment Station, through Prof. C. L. Newman, in 1903. Plant low, half bushy, very vigorous; the row mass, 14 inches high, 30 inches broad; trailing branches, moderate in number, about 4 feet long, rather coarse, reddish; leaflets medium sized, dark, immune to rust, much affected by leaf-spot; shedding rather early; flowers pale violet purple; not prolific; pods moderately well filled, held medium high, straw colored, 5 to 8 inches long, the first maturing in about 90 days; seeds cream-buff to buff, rhomboid, about 6 by 8 mm. This variety is too low in habit and poor in seeding to be of high value; grown four seasons under temporary No. 0593.

29288. *Mountain Crowder.* From the Arkansas Agricultural Experiment Station in 1903, through Prof. C. L. Newman. Very similar in habit to Michigan Favorite, and as early, the first pods maturing in 79 days; pods straw colored, 4 to 6 inches long; seeds vinaceous buff, globose, 7 to 8 mm. in diameter. Grown four seasons under temporary No. 0594. No. 01395, from southwest Missouri, sent by Mr. R. S. White, 1910, is the same.

29289. *Deleware Red.* From Mr. W. S. O'Bier, Seaford, Del., 1903. Half bushy, moderately vigorous, 20 to 24 inches high; trailing branches 3 to 6 feet long, rather few, reddish in color; leaflets large, free from rust, but much affected by red leaf-spot and shed early; flowers pale violet purple; prolific; pods well filled, purplish, 8 to 9 inches long, the first maturing in about 90 days, held medium high on stout, erect, purple peduncles 12 to 18 inches long; seeds maroon, rhomboid, about 8 by 10 mm. Very similar to 17519, but hardly identical; grown several years under temporary No. 0598.

29290. *Red Sport.* From the Arkansas Agricultural Experiment Station, 1903, through Prof. C. L. Newman. Medium tall, half bushy, viny, not very vigorous, the row mass 20 to 24 inches high, 30 inches broad; branches many, 2 to 4 feet long; leaflets medium in size and color, shed early, not subject to rust, much affected by leaf-spot; flowers pale violet purple; prolific; pods well filled, held medium high, straw colored, 6 to 7 inches long, the first maturing in about 100 days; seeds oblong, vinaceous, 6 by 8 mm. Grown for three seasons under temporary No. 0604; much larger and less prolific in 1907 than in 1908. Not a first-class variety.

29291. *Cotton Patch.* From Mr. J. R. Register, Lamar, S. C., April, 1908, through Mr. W. A. Orton, grown three seasons under temporary No. 0814. Identical with it is No. 0875 from Dalton, Ga., through the courtesy of the H. G. Hastings Co., Atlanta, Ga., under the name of Two Crop; and No. 01231 from Mr. W. F. Buchanan, Macha, Fla. Medium high, bushy, little viny, vigorous, the row mass 22 inches high, 2 feet broad; trailing branches medium in number, 2 feet long; leaflets medium in size and color, immune to rust, but somewhat affected by white leaf-spot; flowers violet purple; very prolific; pods held rather high, straw colored, 4 to 6 inches long, the first maturing in about 85 days; pod valves very thin; seeds pinkish buff, rhomboid, about 6 by 7 mm. This variety is very prolific and in 1909 looked exceedingly promising. In 1910, however, the pods were badly distorted by a disease which also affected many other varieties not described here.

29292. *Black.* From the Amzi Godden Seed Co., Birmingham, Ala., 1908. Half bushy, vigorous, viny, usually 1 to 2 feet high; branches low, spreading in the row to form a mass 2 to 4 feet broad; leaflets large, immune to rust, but somewhat affected by red leaf-spot, held late; flowers violet purple; prolific; pods well filled, held rather low, 5 to 10, usually 7 inches long, straw colored, the first maturing in about 70 days; seeds dull black, mostly 6 by 8 mm.; grown three seasons under temporary No. 0897. This seems to be the ordinary variety sold by American seedsmen. Among others the lots grown are 0896, from T. W. Wood & Sons, Richmond, Va., 1908; 0898, from the N. L. Willet Seed Co., Augusta, Ga., 1908; 0588, Black Self-Seeding, and 0589, Black Bunch, from the Arkansas Agricultural Experiment Station, 1903; and 31 lots from miscellaneous American sources grown in 1910. Slight differences were observable in these lots, as they varied a little in stature and vigor and a few days in time of ripening. The best lot was 01044 from Mr. J. L. Nipper, Magnolia, Ark. The Black is one of the most commonly cultivated varieties, succeeding well under a wide diversity of conditions. For a field variety it is rather too viny and bears its pods too near the ground to harvest satisfactorily with a mower. For growing in corn it is excellent and in some sections the favorite variety for pasturing to hogs, as the seeds do not decay readily. In North Carolina, Arkansas, and southward it is said to volunteer freely. At Arlington Farm it rarely volunteers, being far exceeded in this respect by Iron. Only a few agronomists have recognized the fact that two distinct varieties of cowpeas are cultivated as "Black"—the foregoing variety and the one described as "Congo" or Early Black. Ruffin[1] as long ago as 1855 mentioned and described two different black varieties—one early and the other late—not improbably the same two varieties still in common use.

29293. From the Arkansas Agricultural Experiment Station in 1909, through Prof. C. L. Newman. Probably a cross between Whippoorwill and Lady. Rather low, half bushy, the row mass 14 to 18 inches high, 1½ to 2 feet broad; trailing branches few, 1 to 3 feet long; leaflets, medium in size and color, not affected by rust or leaf-spot; flowers almost white; prolific; pods well filled, held medium high, straw colored or sometimes slightly purplish, about 8 inches long, the first maturing in 90 days; seeds oblong or sometimes rhomboid, about 6 by 8 mm. long, white with a large saddle of the New Era color which often extends over the micropylar end, and sometimes with a few scattered spots on the back; iris nearly black. Grown two seasons under temporary No. 0905. It is very much like 22717. Much more prolific than Lady.

29294. From Mr. P. L. Sigman, Alexis, N. C., 1909. Suberect, half bushy, moderately vigorous, the row mass 14 to 16 inches high, 3 feet broad; trailing branches medium coarse, purple, 1 to 3 feet long; leaflets medium sized, free from rust, considerably affected by red leaf-spot; flowers violet purple; prolific; pods well filled, held medium high, dark purple, 6 to 7 inches long, the first maturing in about 90 days; seeds rhomboid, 6 by 7 mm., white with maroon saddle. A very distinct variety, but of no considerable value.

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[1] Ruffin, Edmund. The Southern Pea, Essays and Notes on Agriculture, 1855, pp. 353–355.

29295. From Mr. A. D. McLeon, Red Springs, N. C., 1909. Suberect, half bushy, the row mass 2 feet high and as broad; trailing branches few; leaves medium in size and color, not affected by rust, considerably subject to red leaf-spot; flowers violet purple; prolific; pods well filled, held medium high, straw colored, 2 to 8 inches long, the first maturing in about 90 days; seeds rhomboid, 6 mm. broad by 8 to 10 mm. long, buff marbled with brown and thickly sprinkled with blue specks; iris yellow, thickly speckled with black. This variety is undoubtedly a hybrid between Whippoorwill and Taylor, having the combined markings of both. The blue specks are distributed in groups exactly as in Taylor. In size, habit, and pod characters it is very similar to Taylor. The variety was also obtained from Mr. J. F. Watters, Red Springs, N. C.

29296. From Mr. J. W. Markham, Guin, Ala., 1909. Half bushy, somewhat viny, vigorous, the row mass 28 inches high, 3½ to 4 feet broad; branches many, 5 to 7 feet long, coarse; leaflets large, medium dark, not affected by rust, a little affected by red leaf-spot; flowers violet purple; moderately prolific; pods pale, well filled, held high, 6 to 7 inches long, the first maturing in 100 days; seeds of this closely resemble New Era, but are larger and paler. The habit of the plant, however, is very different. A variety from Mr. R. R. Richardson, Crews Depot, Ala., grown under No. 01018, is identical.

29297. From Mr. J. L. Forelines, Millard, Ark., 1909. Procumbent, viny, moderately vigorous, the row mass 12 to 14 inches high, 3 feet broad; trailing branches green, 3 to 5 feet long; leaflets medium sized, held late, free from rust, a little affected by both red and white leaf-spot; flowers white; not prolific; pods straw colored, 6 to 8 inches long, the first maturing in 110 days; seeds subreniform, 7 by 8 mm., white with a maroon saddle, and some isolated spots of same color. Identical with this is 0979, from Mr. W. J. Rayn, Oviare, Okla., and 0982 from Mr. J. Y. Dorroh, Kennady, Okla.

29298. From Mr. J. D. McLouth, Muskegon, Mich., December, 1909. Suberect, vigorous, rather viny, the row mass 3 feet high and as broad; trailing branches green, 3 to 5 feet long; leaflets medium sized, held late, free from rust, a little affected by both red and white leaf-spot; flowers pale violet purple; prolific; pods medium well filled, held high, straw colored, 4½ to 6 inches long, the first maturing in 100 days; seeds subreniform, 6 by 7 mm., white with maroon saddle, sometimes extending over micropylar end and rarely with isolated spots of same color. The pods of this variety were much distorted by disease. This is a very large, prolific, medium variety that should be valuable where such characters are desired.

29299. *White Giant.* Obtained from the Kansas Agricultural Experiment Station, 1900 (Kansas No. 121). Suberect, half bushy, moderately vigorous, the row mass 18 to 20 inches high, 2 feet broad; leaflets medium in size, shed early, free from rust, but much affected by red leaf-spot; flowers pale violet purple; prolific; pods medium well filled, held medium high, straw colored, 7 to 8 inches long, the first maturing in about 75 days; seeds subreniform, 6 by 10 mm., finely wrinkled with transverse lines, white with a medium-sized black eye. As grown in 1910, it is much like 22050, but smaller and about 25 per cent inferior. No. 01367, from Mr. Henry Junge, Lynch, Cal., could not be distinguished from this either in habit or seeds.

29300. From T. W. Wood & Sons, Richmond, Va., 1910, as Rice. Very similar to Lady 17359 but a week later and the pods and seeds are somewhat different. Pods straw colored, short, about 5 inches long; seeds white with a greenish iris, subglobose, about 5 mm. in diameter. This variety is very distinct from 17359 in its short pods and subglobose seeds. The same thing has been grown as No. 01020, from Mr. William Bohanan, Colburt, Okla., and No. 01381, from the Steckler Seed Co., New Orleans, La., as Lady. Several extracted hybrids from Mr. J. W. Trinkle, Madison, Ind., have identical seeds, but all differ slightly in habit. These were grown as Nos. 0563A, 0625E, 0625H, 0626A, 0626D, and 0626E.

29301. *Miller.* From the N. L. Willet Seed Co., Augusta, Ga., 1909. This is practically identical with 17340, but differs in its pods and seeds. Pods straw colored, 5 to 7 inches long; seeds rhomboid, 5 by 6 mm., buff, the iris yellow. This description applies only to the buff-colored seeds which make up the largest percentage of the mixture called Miller.

29302. From the N. L. Willet Seed Co., Augusta, Ga., 1909. These are the black seed selected from a mixed variety called Miller. Somewhat procumbent, viny, very vigorous, the row mass 3 feet high and as broad; branches green, 3 to 5 feet long; leaves medium sized, free from rust, somewhat affected by red leaf-spot; flowers violet purple, moderately prolific; pods well filled, held rather high, straw colored, 5 to 7 inches long, the first maturing in 100 days; seeds black, subreniform, 6 by 9 mm. This is a vigorous variety, but late and very viny; it bears the same relation to ordinary Black that Unknown does to Clay.

29303. Asparagus bean. From Tehwa, China, 1910. Procumbent, viny, moderately vigorous, the row mass 14 to 16 inches high, 2½ feet broad; leaflets medium sized; flowers pale violet purple; prolific; pods well filled, pale colored, little inflated, about 13 inches long, the first maturing in about 70 days; seeds reniform, 5 by 9 mm., pink with chalazal end white; iris nearly black. This is a very distinct variety.

29304. From a single plant found at Arlington Farm in 1909. Suberect, half bushy, hardly viny, vigorous, the row mass 26 inches high, 2 to 2½ feet broad; branches coarse, green; leaves medium sized, free from rust, but a little affected by red leaf-spot; flowers pale violet purple; prolific; pods medium, well filled, held high, straw-colored, 5 to 6 inches long, the first maturing in 75 days; seeds subreniform, white with a large marbled buff and brown eye which often extends over the micropylar end; iris brownish yellow. An excellent, very vigorous variety with the habit of Whippoorwill; not the same as 17408.

29305. Catjang. From the Botanic Garden, Madrid, Spain, as *Dolichos tranquebaricus.* Procumbent, very viny, the row mass compact, 6 to 8 inches high, 2 feet broad; branches many, 1 to 3 feet long; leaflets dark, small, angular, much affected by rust, little by leaf-spot; flowers violet purple; prolific; pods well filled, held erect, straw colored, 3½ to 4 inches long, the first maturing in about 80 days, bursting easily and the valves coiling tightly; seeds cream buff, oblong, about 2½ by 4 mm. Too small to be of much value; grown two seasons under No. 0409.

29306. In habit and period of maturity like Unknown 27545; pods straw colored, well filled, 7 inches long, the first maturing in 110 days; seeds very flat, smooth, rhomboid, 6 by 8 mm., pale buff with a dark olive-brown iris. Different from any other buff cowpea in its peculiar seeds. Grown only in 1910.

29307. From Mr. C. E. Fant, Chester, S. C., 1909. A vigorous, viny variety. the row mass 20 inches high, 3 to 3½ feet broad; trailing branches green, medium coarse, 3 to 5 feet long; leaflets large, held late, free from rust, a little affected by red leaf-spot; moderately prolific; pods straw-colored, 6 to 7 inches long, well filled, the first maturing in about 120 days; seeds maroon, subreniform, smooth, 6 by 8 mm., twice as broad as thick; iris dark. In habit this is identical with 17405E, but the seeds are different. Six other lots obtained from various sources in 1909 could not be distinguished from this. It bears the same relation to Red Ripper 17350, that Unknown does to Clay.

29308. From Mr. G. W. Duren, Booneville, Ark., 1910. Habit very similar in all respects to Lady 17359, but not as prolific; flowers white; pods 7 to 9 inches long; seeds white, very reniform, thick, 5 by 10 mm.; iris greenish yellow. The same variety under the same name has been received from Oklahoma, No. 01024. It is very distinct from any other white variety in the shape of the seeds. Grown only in 1910.

29309. *Trinkle's Holstein.* From Mr. J. W. Trinkle, Madison, Ind., June, 1909. A renumbering of 0917 referred to under 17327.

29310. From a single plant found at Arlington Farm, 1909. Suberect, half bushy, vigorous, the row mass 2 feet high and as broad; stems green; leaflets medium sized, dark green, subject to rust, but little affected by red leaf-spot; flowers violet purple; prolific; pods pale, held high, poorly filled, the first maturing in about 95 days; seeds not distinguishable from New Era 21088. The seeds of this variety are very similar to New Era, but the plant is very different. The tendency of the branch tips to be viny and bear small leaflets is conspicuous. The pods were mostly destroyed by a disease, possibly bacterial. Were it not for this last defect, the variety would have much promise. Grown only in 1910.

CONCLUSIONS.

The number of varieties of the cowpea and the related catjang and asparagus bean is much larger than agronomic writers have realized. The present publication describes about 220 cowpeas, 50 catjangs, and 35 asparagus beans. The cowpea and the catjang are much more desirable plants for forage, as the asparagus bean is too viny and procumbent.

More or less data concerning named cowpeas have been published in experiment station bulletins and elsewhere. It is rarely possible now to identify these, excepting where pedigreed or otherwise authentic seed is available. In the main the names have been preserved only in a traditional way by seedsmen. This method of identification is often unreliable, as different varieties in many cases have very similar seeds.

In some cases old varieties can be satisfactorily identified because no other variety with similar seeds is common. Among such are Whippoorwill, New Era, Iron, Taylor, and Blackeyed Lady. On the other hand, such names as Black, Clay, Unknown, Red Ripper, Blackeye, Browneye, and Crowder are group names, being in each case used primarily for a color or shape of seed.

Foreign varieties of cowpeas are as a rule inferior. The earliest varieties have been obtained from northern Italy; those from tropical regions are usually very late and vigorous; Chinese varieties are much subject to rust; South African varieties are nearly all distinct, some of them valuable; the catjangs of India are valuable on account of their small, hard seeds, which are little attacked by weevils.

Everything considered, the best varieties of cowpeas tested are Whippoorwill, New Era, and Iron, and recent hybrids of these, including Brabham and Groit. Other varieties which possess merit and which are being used in breeding include the following: 8687, a very vigorous catjang; 21292, 21602, and 22759, perfectly upright late catjangs; 21508, an erect early cowpea from Japan; 22958, a vigorous late cowpea from Rhodesia; 29282, from Italy, the earliest cowpea yet found.

The breeding work thus far conducted indicates that practically every combination of seed, color, and shape with habit and life period can be obtained. This matter is of some importance in growing varieties that can be easily recognized.

NOTE.—While this bulletin was in final page proof an opportunity was afforded to examine the original specimen of *Dolichos unguiculatus* L., preserved in the herbarium of the Linnæan Society in London. The specimen is an excellent one, grown in the greenhouse at Upsala, Sweden. It is not the cowpea to which most recent botanists have referred it, but is the plant recently described by Urban as *Phaseolus antillanus*. The error in considering the name *Dolichos unguiculatus* as applying to the cowpea was undoubtedly due to Linnæus's very brief and insufficient description and to the further fact that his original specimen was not examined by later botanists. The correct botanical designation for the cowpea is therefore *Vigna sinensis* (Stickman) Endlicher (1848).—C. V. PIPER, *January 25, 1912.*

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